

American Aviation

MANAGEMENT
ENGINEERING
PRODUCTION
OPERATIONS
MAINTENANCE
EQUIPMENT



AUG. 2

1954 *[Signature]*

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Overseas Travel .. 43**

50 cents

Convair's globe-roaming B-36 is also an airport in the sky

Something new has been added to the B-36 bomber, already the most effective and versatile aerial weapon in history.

Fighter aircraft can be launched and retrieved by a B-36 "mother ship" in flight anywhere in the world. The combination of the B-36's range, jet fighter speed, and nuclear capability is enough to crack any air defense system! And no extension of the U.S. Air Force strategic air arm could be more timely or economical.

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The fighter pictured is the high-performance, photo-reconnaissance version of the Republic Thunderstreak, selected to prove this significant development with Convair's B-36

Air Force buying is now entering the modernization phase; advance planes are being sought to keep U.S. airpower on top in years approaching 1960.

Present aircraft deliveries, however, are not in this stage; they constitute an inventory program for buildup to 137 wings by July, 1957.

Delivery rate to fill the 137-wing inventory is continuing at a peak. This will decline gradually to a modernization or "sustaining" rate—about half of present program. Level-off will be reached in about 2½ years.

Manufacturers have been given some rugged technical goals to shoot for in next generation of military aircraft. And AF has promised that if a new product offers substantially more than its predecessor, it will be bought immediately.

Military procurement practices may be headed for further scrutiny by Congressional groups. Recent criticism of Air Force for "apparently needless expenditure" exceeding \$100 million for "unproven" communications equipment points to increased activity in that direction.

House Military Operations subcommittee was concerned that violations of military security classifications through use of knowledge gained under development contracts are difficult to pin down. It also felt that controls and procedures by which federal rights and interests under these contracts are protected are virtually non-existent or ineffective.

Top Commerce Department officials are being linked with talk of reviving interest in a "chosen instrument" policy for U.S. international aviation.

They're using President's civil air policy report (prepared by ACC under Robert B. Murray Jr., Under Secretary of Commerce for Transportation) to support withdrawal of competing international services under guise of government economy.

Two areas are now chiefly affected—Pacific and Latin America. Northwest Airlines appears to have weathered storm within CAB for Orient route renewal, but still faces fight when case goes to White House. Balboa case, key to Latin American situation, is still undecided in CAB, but promises showdown between Commerce and Justice Departments when it reaches White House.

Air Force is expected to take early action on disposing of its C-46's, now that CAB has ruled on future operation of the aircraft.

Reason: Operators of leased AF C-46's must show by Oct. 1 that arrangements for CAB-ordered modifications have been initiated. But they're in no position to do so without being assured of future ownership.

Big question still concerns price to be asked by AF. Current C-46 market price is about \$85,000; best guesses are that need for \$20,000 modification will bring military sales figure down to \$65,000.

Resumption of Comet services may not be too far off, some European Comet operators claim. They believe that with modifications incorporating lessons learned from Farnborough investigation of Comet I accidents, the Comet II may be able to enter service in early 1955.

Prospects of Comet I ever carrying passengers again aren't as bright, however.

News at Deadline

707 Reaches 42,000 feet, 550 mph In 16 Hours of Flight

Boeing's jet tanker-transport was flown 15 hrs. 46 min. during the first eight days of its Phase I 50-hour test program, reached altitude of 42,000 ft. and attained a speed of more than 550 mph.

Longest flight in the intensive tests, which Boeing said are progressing "extremely well" and ahead of schedule, was 3 hrs. 55 min. on July 21. Operation of Pratt & Whitney's JT-3L engines has been "excellent in all respects." In charge of tests is A. M. "Tex" Johnston, Boeing's chief of flight test.

Lightly loaded in early flights, the 707, which will be used as a military and commercial demonstrator, was airborne in less than 3000 ft. On landings, with little brake action, Johnston had slowed the plane enough to turn before hitting the 5000-ft. mark on Boeing Field's 10,000-ft. runway.

Technical details of the 707, reported exclusively in *AMERICAN AVIATION* on Nov. 23, 1953, and now released by Boeing:

•**Body:** semi-monocoque construction with passenger and crew accommodations on upper deck. Passenger area is 89 ft. 7 in. long, floor width is 118 in., height is 83 in. Plane can

be fitted to carry 80-130 passengers. Lower portion of body used to house cargo and landing gear. Body is pressurized except for parts in which wing root and landing gear are contained.

•**Control systems:** slotted flaps, two sections on each side of wing (which is 2400 sq. ft. in area with integral fuel tanks). Ailerons consist of inboard and outboard section on each side. Spoilers are installed on wing's upper surface to aid in lateral control and to increase drag during descent and after landing.

•**Tail:** Horizontal tail consists of adjustable stabilizer and elevators. Fin and rudder of vertical tail can be folded to reduce overall height of plane to about 22½ ft., permitting it to be housed in modern large-size hangars.

•**Pods:** Engine pods, with upswinging side panels, allow engine change in as little as 30 minutes, Boeing states. Highest part of engine can be reached with a short stepladder. Engine installation is compartmented for fire control; fireproof lines and fittings are used throughout the nacelle.

•**Landing gear:** Each main gear consists of a four-wheel truck attached to a single oleo. Main gear trucks retract by swinging laterally inboard, and wheels are housed in lower part of body,

aft of rear main wing spar. Landing gear doors are shut when wheels are down, open to permit retraction, then close again. Retraction and extension cycle is about 10 seconds.

Boeing states that "roller skate" action of main gear as it passes over bumps results in oleos being subjected to reduced loads and therefore in a smoother riding airplane during ground operations. Footprint pressure at maximum take-off gross weight is only 80% to 90% of current four-engine transports; space has been left to provide larger tires and reduce footprint pressure even more if desired.

Hydraulic nose-gear steering is provided, with maximum steering angle of 55 degrees.

Republic Moves to Speed F-105 Project

In a move to speed up work on the forthcoming F-105, Republic Aircraft Corp. has moved some 370 engineering personnel assigned to the new AF fighter project from New York City offices to Republic's F-105 main assembly plant 45 miles from Farmingdale, L. I. The F-105 bears the highest designation yet made public by the Air Force for combat aircraft.

AF Weighs Bid for J73 Engines in F-84's

The Air Force last week was weighing a bid submitted by Republic Aircraft Corp. for production of about 400 F-84J's, a higher powered version of the fighter plane. The "J" model would use the General Electric J73 turbojet engine (9200-lbs. thrust) instead of Curtiss-Wright J65's (7300-lbs. thrust). The bid apparently was submitted at the request of the Air Force.

In view of earlier decisions not to use the J73 in F-84 aircraft, this move represents a sharp reversal on AF's part. It is attributed to last month's visit by Assistant AF Secretary Roger Lewis to Republic's Farmingdale, L. I. plant as part of his nation-wide tour to aircraft and engine manufacturers. To accommodate the more powerful engine some fuselage changes in the F-84 would be required.

Note: WASHINGTON VIEW will be found on the last page (NEWSLETTER-4) of this issue. Other NEWS AT DEADLINE is on NEWSLETTER-3.

707's Flight Test Log

July 15: First flight, 1 hr. 24 min. Airborne after 2100-ft. run, plane carried out low and medium altitude shakedown. Lateral controls tested at low and medium speeds with flaps extended and retracted. Airplane was brought to the edge of a stall.

July 17: 2 hrs. 25 min. More low and medium altitude shakedown. Plane reached 27,300 ft. and 485 mph true airspeed. Lateral control studied at higher speed. Air-conditioning and windshield heating checked.

July 19: 2 hrs. 19 min. High altitude shakedown. Flew at 42,000 ft. and maximum speed of above Mach .8—550 mph—at high altitude. Systems and control effectiveness studied.

July 20: 1 hr. 49 min. Alternate means of operating certain components were tested; flaps were lowered manually to "fully down" position. A simulated "go-around" was carried out in "very satisfactory" manner.

July 20: 21 min. Low speed low altitude test.

July 21: 3 hrs. 55 min. Climbed to operational altitude at maximum climb power setting to obtain engine cooling and pressure data. Sound level measurements taken in cabin. Engines shut off and restarted at operational altitudes in "completely normal manner." Normal descents, at from 5000 to 8000 ft. per min., made from operational altitude with "airbrakes" extended on wings and landing gear down, to test tank vents. Tests carried out with "trailing bomb" static source added to airspeed indicator system to obtain a calibration of airspeed measuring system.

July 22: 3 hrs. 33 min. Full stall investigated. "Cold soak" test made at high altitude to determine if all parts of the plane functioned when subjected to low temperatures present at height at which aircraft will normally fly. Brief check made at 707's ability to hold formation with B-52 as it would in aerial refueling.

HIGH BLOWER TAKE-OFFS AT 13,400 FEET...and

"not a single spark plug irregularity with **CHAMPIONS**"



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Mr. Duane Stranahan, Vice Pres.,
Champion Spark Plug Company
Toledo 1, Ohio

June 10, 1954

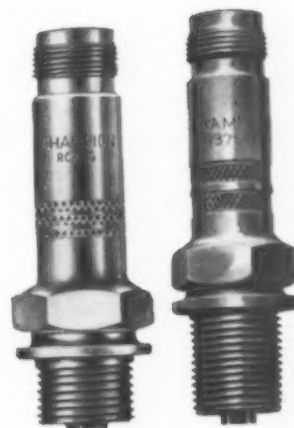
Dear Mr. Stranahan:

Our operation of DC-6 and DC-6B aircraft at La Paz, Bolivia, with an airport elevation of 13,400 feet above sea level, subjects the engine ignition systems and particularly the spark plugs to unusually severe conditions. The take-off requires the use of high-ratio engine blower with water/alcohol injection due to the fact that air density at this altitude is only 65% of that at sea level, and the time during which take-off power is required is twice as long as for the normal sea level take-off.

These severe take-off conditions, coupled with the well-known effect of reduced atmospheric pressure on the ignition system, require extra reliability and performance of the spark plug. We use the Champion R37S-1 spark plugs in all cylinder locations of the R-2800 CB-17 engine except the rear position of the front row cylinders, in which the Champion R56S plug is used. We have not experienced a single spark plug irregularity at La Paz with this winning combination since inception of the operation.

Very truly yours,

T. J. Kirkland
Vice President-Operations



The RC26S and R37S-1 are the most widely used of Champion's many types of aircraft spark plugs.

Champion is proud of the part it plays in helping Panagra, as well as ninety-four other major airlines, maintain safe, dependable air service all over the world.

When you purchase Champion Spark Plugs for your aircraft engine or for any other power plant, you are obtaining the world-famed product of a company which devotes all its research, resources and integrity to the production of spark plugs alone.

CHAMPION SPARK PLUG COMPANY, TOLEDO 1, OHIO

AUGUST 2, 1954

AVIATION'S FAVORITE

CHAMPION

SPARK PLUGS

World's Largest Aviation Publishers

American Aviation

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1025 Vermont Ave. N.W., Washington, D. C.

Editor and Publisher: Wayne W. Parrish
Executive Editor: Eric Bramley



Phone: Sterling 3-5400

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Correspondents in Major Cities Around the World

August 2, 1954

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General Manager: Leonard Eiseler
Director of Advertising: Stephen R. Kent
Circulation Promotion Mgr.: Larry Brettnner
Circulation Service Mgr.: Geneva C. Kinnaird
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American Aviation is published every other Monday by American Aviation Publications, Inc., Washington, D. C. Printed at The Telegraph Press, Harrisburg, Pa. Subscription rates for United States and Canada—\$5.00 for 1 year; \$8.00 for 2 years. All other countries—\$7.00 for 1 year; \$12.00 for 2 years. Entered as Second Class matter in Washington, D. C., and Harrisburg, Pa.

Change of Address: Send old address (exactly as it appears on mailing label for your copy of magazine) and new address, including zone number, if any, to 1025 Vermont, N. W., Washington, D. C. Allow two weeks for change-over.

Publishing Corporation: American Aviation Publications, Inc., Wayne W. Parrish, president; Leonard Eiseler, vice-president and general manager; Albert H. Stackpole, Eric Bramley, vice president; E. J. Stackpole, secretary-treasurer.

American Aviation incorporates Airports and Air Carriers, Airports, Aviation Equipment, The American Pilot, Aviation Sales and Service, U. S. Aviation and American Airports. All rights to these names are reserved.

ADVERTISING OFFICES . . .

New York Office: Administration Building, LeGuardia Airport, New York, N. Y. Illinois 7-4100, Stephen R. Kent, director of advertising; Edward Dowdell III, regional advertising manager.
West Coast Office: Park Central Building, 412 West Sixth St., Los Angeles 14, Calif. Trinity 7997, Ray-

mond M. Schuster, regional advertising manager.
Chicago Office: 139 North Clark St., Chicago 2, Ill. Central 6-5804, A. J. Copeland, regional advertising manager.

Foreign Advertising Representative: United Kingdom—Pearl Cooper, Ltd., 213 Norfolk St., Strand, London, W. C. 2. Tel. Temple Bar 8111/2.

OTHER PUBLICATIONS . . .

American Aviation Daily, a daily news service for the entire industry, \$200 per year. Managing Editor: Keith Saunders.

American Aviation Directory: twice yearly listing of products, people and organizations. \$7.50 each. Managing Editor: Marion E. Grambow.

Official Airline Guide: Monthly publication of airline schedules and fares. \$12.50 per year in USA; \$14.00 in Canada; \$18 elsewhere. Published from 139 N. Clark St., Chicago 2, Ill. Central 6-5804. Managing Editor: Robert Parrish.

Air Traffic News (incorporating Air Tariff Reports): Daily rates and tariff news. \$175 per year. Managing Editor: Wallace I. Longstreth.

Airport News, weekly newsletter for airport officials, suppliers, and services. Airmailed every Friday. \$25 per year. Managing Editor: Lois C. Phillmus.

Air Information Division: 595 Broad Avenue, Ridgefield, N. J. Phone: Morsemere 6-8830. Edward H. Henkle, director.

When & Where

- July 27-Aug. 5—Twenty-first National Soaring Contest, Elsinore, Calif.
- Aug. 4—ATA airport passenger terminal service committee mtg., Washington (D. C.) National Airport.
- Aug. 8—National Conference of Commissioners on Uniform Laws mtg. (legislation setting financial responsibility of private flyers to be discussed), Chicago.
- Aug. 9-10—American Society for Quality Control conference, U. S. Grant Hotel, San Diego, Calif.
- Aug. 9-11—IAS mtg. on turbine powered air transportation, Benjamin Franklin Hotel, Seattle.
- Aug. 17—ATA joint airlines-CAA maintenance committee mtg., Temp. Bldg. 4, Washington, D. C.
- Aug. 18-19—National Aeronautics Assn. annual mtg., Hotel Fontenelle, Omaha, Neb.
- Aug. 19-22—Air Force Assn., 8th annual convention, Omaha, Neb.
- Aug. 31-Sept. 2—Scintilla Div., Bendix Aviation Corp. ignition conference at Sidney, N. Y. plant.
- Aug. 31-Sept. 2—ATA agency committee mtg., Ambassador Hotel, Los Angeles.
- Sept. 4-6—National Aircraft Show, Dayton, Ohio.
- Sept. 13-24—Instrument Society of America, First Int'l Instrument Congress & Exposition, and 9th Nat'l Instrument Conference & Exhibit, Philadelphia.
- Sept. 22-25—Nat'l Assn. of State Aviation Officials, annual mtg., New Washington Hotel, Seattle.
- Sept. 30-Oct. 1—Radio Technical Commission for Aeronautics fall assembly, Washington, D. C.
- Oct. 5-7—Champion Spark Plug Co. 10th annual spark plug and ignition conference, Hotel Secor, Toledo, O.
- Oct. 5-9—SAE aeronautic mtg. and display, Hotel Statler, Los Angeles.
- Oct. 11-15—American Institute of Electrical Engineers fall mtg., Morrison Hotel, Chicago.
- Oct. 18-22—National Safety Council, mtg. of aeronautical section, Conrad Hilton Hotel, Chicago.
- Oct. 27-29—National Business Aircraft Assn. mtg., Hotel Adolphus, Dallas, Tex.
- Nov. 8-10—National Aviation Trades Assn. annual convention, Biltmore Terrace Hotel, Miami Beach, Fla.
- Nov. 14-17—Aviation Distributors and Manufacturers Assn., 12th annual mtg., Mayflower Hotel, Washington, D. C.
- Nov. 17-19—Calif. Assn. of Airport Executives mtg., San Jose, Calif.

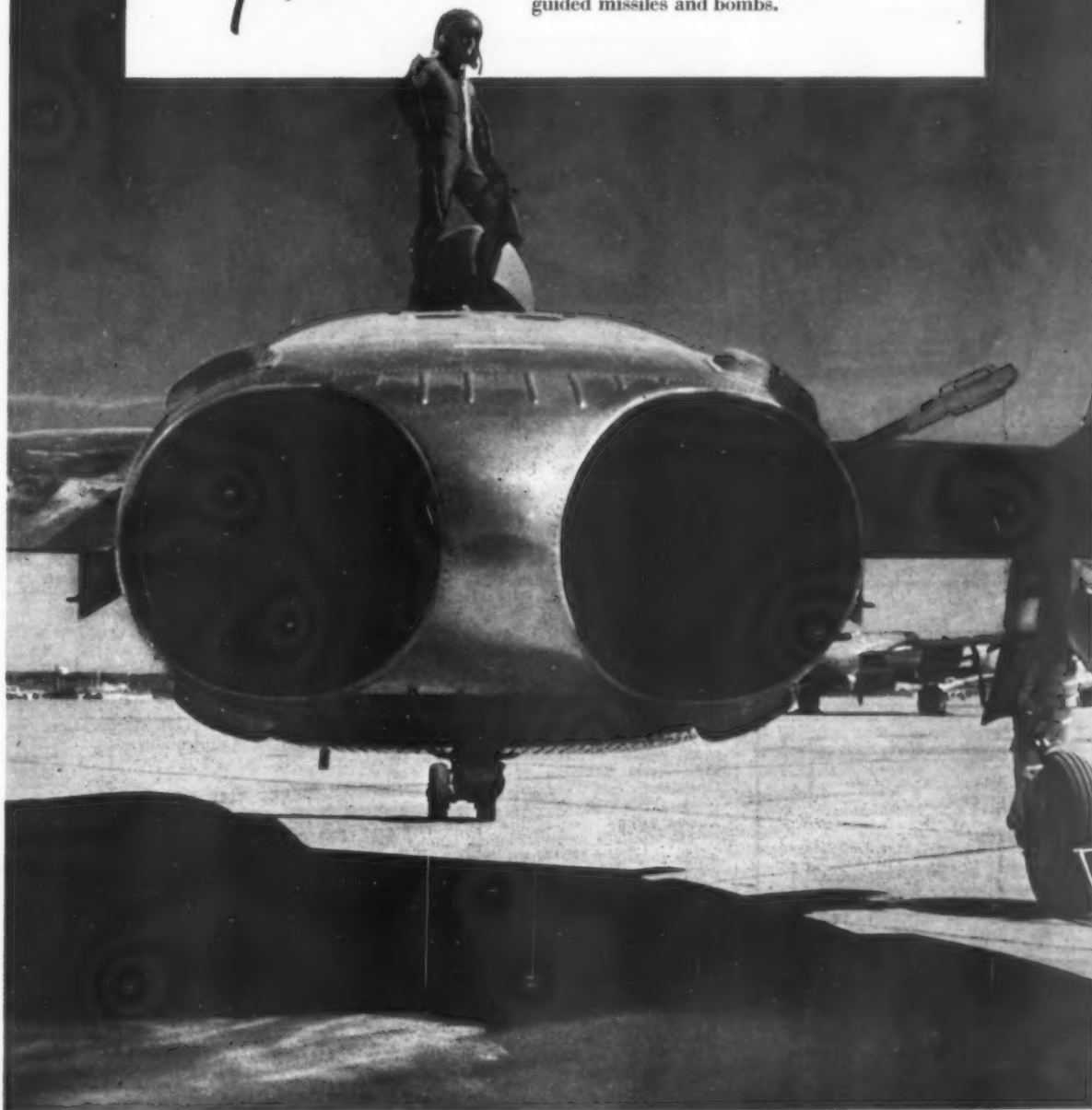
INTERNATIONAL

- Sept. 7-12—Society of British Aircraft Constructors, Aircraft Show & Flying Display, Farnborough, England.
- Sept. 13-17—IATA, 10th annual mtg., Paris.
- Sept. 19-21—Int'l Northwest Aviation Council 18th annual convention, Hotel Vancouver, Vancouver, British Columbia.
- Sept. 20-29—Federation Aeronautique Internationale general meeting, Istanbul, Turkey.
- Sept. 28—IATA traffic conferences, Venice, Italy.
- Oct. 5—ICAO, air navigation mtg. for the North Atlantic region, Montreal.

AMERICAN AVIATION

"Versatility Plus"

Guided missiles and swept-wing jets, symbols of military aviation's modern-day might, set the pace for the U. S. Navy's air arm. Chance Vought's versatile F7U-3 Cutlass fighters typify the new strength of carrier-based aircraft. They can function as fighters, interceptors or attack planes, supplementing cannon fire-power with rockets, guided missiles and bombs.



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| ★ CMA | ★ SAS |
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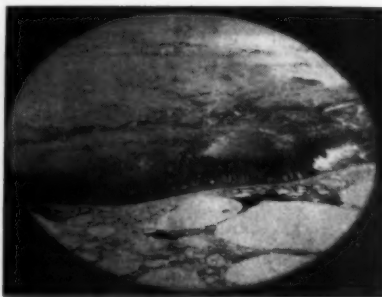
Letters

Letters should be addressed to The Editor, American Aviation Magazine, 1025 Vermont Ave., N. W., Washington 5, D. C. Anonymous letters will not be printed, but names will be withheld upon request.

WHERE'S NORTH POLE?

To the Editor:

The picture enclosed (from Champion Spark Plug ad, AMERICAN AVIATION, June 21) is not a picture of the North Pole. I've been there. So have a lot of



SAS's "North Pole"

other pilots by now. There is no land within 400 miles of the Pole. This shot looks like Ellesmere Island at least 900 miles from the North Pole.

LEVERETT G. RICHARDS
Aviation Editor

The Oregonian
Portland, Oregon

The photo, prominently displayed in the Champion ad, bore the following caption: "The North Pole photographed from a porthole of the Scandinavian Airlines System DC6B, opening a commercial route from Los Angeles to Copenhagen."

AMERICAN AVIATION checked with SAS, Champion, and the Air Force with these results:

1. A statement from Col. Bernt Balchen, arctic veteran now serving with the Arctic Division of the Air Force Operations and Planning Section, identifying the photo as "the south shore of Devon Island, one of the Arctic islands in the Canadian archipelago, about 900 miles south of the North Pole."



Air Force's North Pole

2. An official Air Force photo bearing this caption: "This photograph was made from an altitude of 16,870 feet. It

is impossible to pinpoint the exact location of the Pole in this photograph."

3. A photograph supplied by SAS identical to that used in the Champion ad which bore the caption: "The west coast of Greenland with steep mountains and drifting iceflakes. The photo is taken by SAS photographer Peer Mortensen from an altitude of 9000 feet, and the location is just north of Sonderstromfjord Airport, where the SAS planes land."

4. A letter from Champion's public relations manager, J. R. McGeorge, which says: "We have made a thorough check with our advertising agency and have the information that the copy and pictures used in the ad were approved and authenticated by the Scandinavian Air Lines. In any case where a picture of the North Pole is involved, we, at Champion and at the agency, would have to depend upon the source of material for the information. So far as I can determine, no person from Champion, or the agency, has ever seen the North Pole."

We can only conclude from sweltering Washington that, wherever it is, it looks mighty cool.—Ed.

TWO FIRSTS FOR KAMAN

To the Editor:

I respectfully call your attention to an error in the July 5th issue of AMERICAN AVIATION. You stated:

"Thus far, the U. S. has seen only two turborotors make their first flights:

"Kaman's K-5 (USN K-225), which has flown with Boeing's 502-2 and 502-10.

"Sikorsky's S-59 which uses the fixed-shaft Continental XT-51-T-3."

Kaman has flown two turborotor firsts: namely the K-5 powered by a single Boeing 502-2, first flight December 1951, and a twin turborotor HTK-1 powered by two Boeing 502-2's, first flown in March 1954. These two distinctly different helicopters, together with the Sikorsky S-59, bring the total of U. S. turborotor helicopters to three. Kaman has not flown the Boeing 502-10.

CHARLES KIRCHNER

Assistant to the President

The Kaman Aircraft Corporation
Bloomfield, Connecticut

SEE THE FEATHERS FLY

To the Editor:

You hit it right on the head in the July 5 issue (Billions Abroad) when you stated that were the government to do something for our own people, the shock would be difficult to take.

It does seem strange that in view of the large sums of money being turned over to foreign countries the government would take such a penny-pinching attitude toward local service carriers.

If they would keep the local service companies in business, at least they could depend on having a group of well-trained transport pilots and mechanics in reserve. On the other hand, spending money abroad to train and equip pilots is a definite risk as it would be difficult to predict whether, when the shooting starts again, those pilots would be with us or facing us.

Of course this is only one of the

AMERICAN AVIATION



THERE GOES THAT PASSENGER...

Since he came back from Europe he's been a man to watch. Over there leading airlines are operating the Viscount and setting up new records for passenger preference—and profits! That passenger found flying by Viscount was something really new! *Certainly* it was the most comfortable flight he had ever made. *Certainly* it was the quietest. *Certainly* one noticed hardly any vibration—and those four turboprop engines inspired a feeling of real confidence. *Watch that Passenger...* Back in the United States he still flies—and talks—and looks forward to the day when he can fly by Viscount again. This may be sooner than he once thought. For among the airlines that have already ordered Viscounts are Capital Airlines, Trans-Canada Air Lines and British West Indian Airways.

FORECAST INTO FACT

Its designers predicted great things for the turbo-prop Viscount. Here is what it has achieved—so far:

- *Earned more than \$1,000,000 profit for British European Airways in six months.*
- *Doubled BEA's share of traffic on important routes.*
- *Cut inter-city flight schedules.*
- *Won firm orders from ten airlines in both hemispheres—including TCA and B.W.I.A.*

VICKERS VISCOUNT

FOUR ROLLS-ROYCE PROPELLER-TURBINE ENGINES



VICKERS-ARMSTRONGS LIMITED • AIRCRAFT DIVISION • WEYBRIDGE • ENGLAND

REPRESENTED IN THE UNITED STATES BY CHRISTOPHER CLARKSON, 342 MADISON AVENUE, NEW YORK 17, U.S.A.

AUGUST 2, 1954

W.C.D.

What do YOU know about the vectored slipstream principle?

If you are one of a select group of men that can offer valuable contributions to its application and effects, why not look into Fairchild's career opportunities?

You probably know that Fairchild is now producing the C-123 *Avitruc*, as well as the world-famous C-119 *Flying Boxcar*. But did you know that reconnaissance aircraft . . . jet fighters . . . and jet bombers and transports are on the drawing boards too? These diversified, stimulating assignments increase the inventive challenge to Fairchild's team of qualified aerodynamicists.

Gracious country living only minutes away from urban Baltimore or Washington . . . paid pension plan . . . an excellent salary with paid vacations . . . an ideal working environment . . . generous health, hospitalization and life insurance . . . and the many other benefits of a progressive company add to the pleasure of working with Fairchild.

You'll be investing wisely in a secure future if you take time today to write to Walter Tydon, Chief Engineer, outlining your qualifications. Your correspondence will be kept in confidence, of course.



many things they are doing in Washington that confuse me. It reminds me of a remark made by the late Dave Behncke during a pilot negotiation when the conversation became confusing to him. He said it was somewhat like throwing a bird through a window—everyone could see the feathers fly, but no one could see where the meat was.

D. G. HENDRICKSON
Hendrickson Aeromar, Inc.
Fort Lauderdale, Fla.

Books

A History of Flying by C. H. Gibbs-Smith. 304 pages. Published by Frederick A. Praeger, 105 West 40th Street, New York 18, N. Y. \$4.95.

This exceptionally well-written historical work deals in detail with its subject up to World War I. The past 40 years are covered more superficially since by 1914, as the author puts it, "aviation had taken its place as a new but practical form of locomotion."

He looks objectively at Orville Wright's flight on December 17, 1903, pointing out that it is historically important to realize that this triumphant flight was *powered, sustained, and controlled*. Leave out any of these three conditions and someone else had already covered the other two.

"A History of Flying" is fascinating reading to layman and technician alike. It provides basic knowledge which should be at the back of the minds of everyone connected with aviation. The text is accompanied by over 160 photographs, diagrams, drawings, and prints of the illustrious failures as well as the final successes in aviation's history.

. . . AV

Flight of the Lucky Lady.

By Don S. Midlam; Published by Binfords & Mort, Portland, Ore. Price, \$3.50. 208 pages.

This is a detailed, exciting account of a Boeing B-29, named the Lucky Lady, one of hundreds that participated in the World War II bombing of Mitsubishi, Japan's huge aircraft and engine manufacturing facility. It is a fictionalized but true story, the author notes.

Author Midlam's story of the destruction of Mitsubishi, perhaps the most highly defended enemy installation in U. S. aviation history, by the 504th Bomber Group is an on-the-spot account, since the author at that time was assigned to the B-29 base on Tinian Island in the Marianas. Its narration, plus 44 photographs, is a significant document in military aviation history.

. . . HSB

AMERICAN AVIATION



why this "Sign of Service" has become **THE SIGN OF ASSURANCE**

—for every private and corporate plane owner!

YOU'LL find this sign displayed by the nation's largest network of distributors and dealers supplying quality aircraft parts and service to operators of private and commercial airplanes — a network easily accessible to all of the thousands of planes in everyday use.

Where the Goodyear "Sign Of Service" is displayed, you'll find not only a complete stock of time-proved Goodyear Aviation Products — *products chosen by more aircraft manufacturers as original equipment than any other kind*—but a big stock of other products to meet your every aviation need.

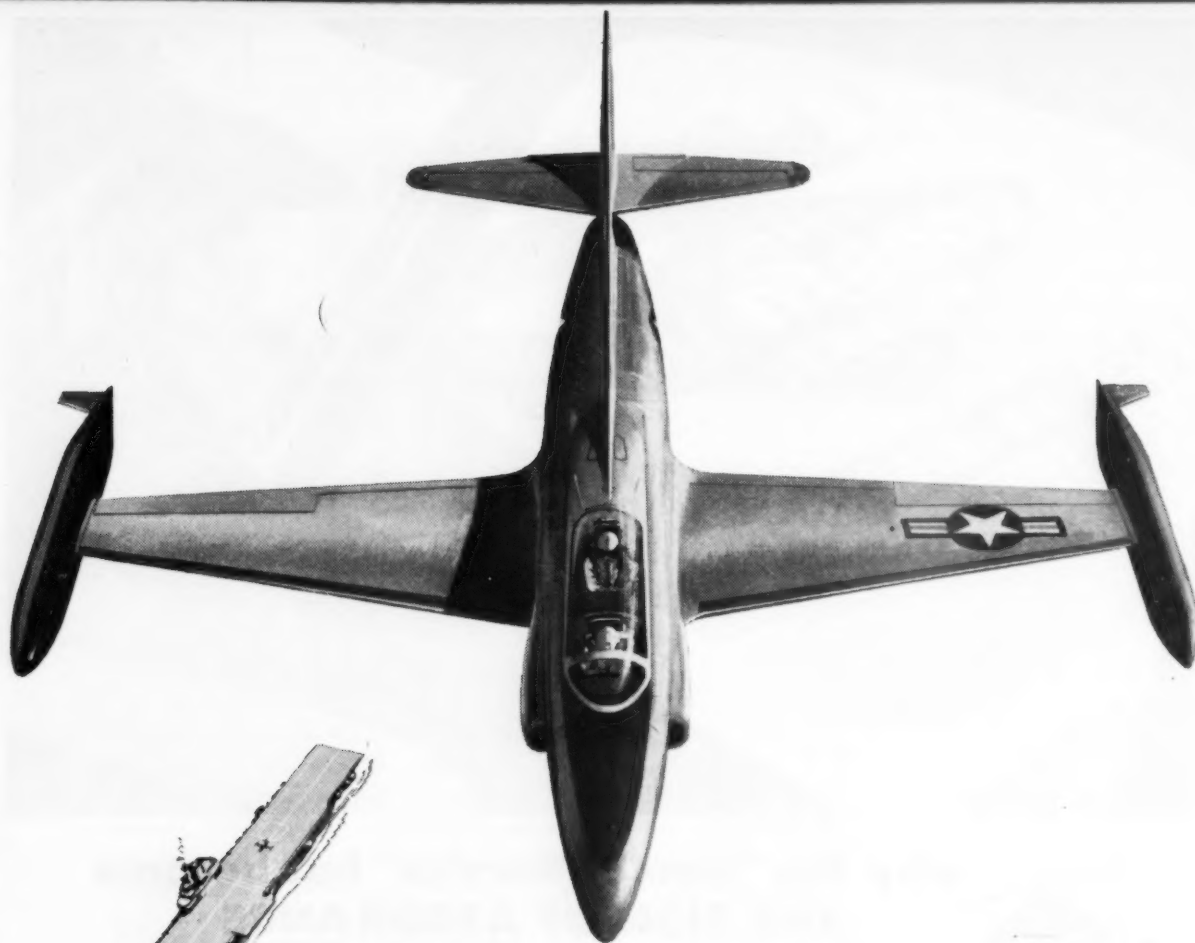
It has become a sign of *assurance* to every private plane operator — assurance of dealer integrity and dependable service, of quality products with a warranty and universal acceptance, of convenient and complete parts availability wherever you fly.

This nationwide network is the result of years of close teamwork between Goodyear and our distributor organization — a proud and reputable team which has made it its business to provide the finest and most complete service to America's private aircraft.

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FACILITIES + ABILITIES = EXTRA *plus* IN PERFORMANCE



LOCKHEED SOLVES JET PROBLEMS IN SCIENCE OF FLIGHT TRAINING

Presenting Lockheed's Improved Navy and Air Force Jet Trainer

Here is a new jet trainer designed for *any* phase of jet flight instruction.

It gives maximum training potential, even down into lower phases of training now requiring propeller-driven planes.

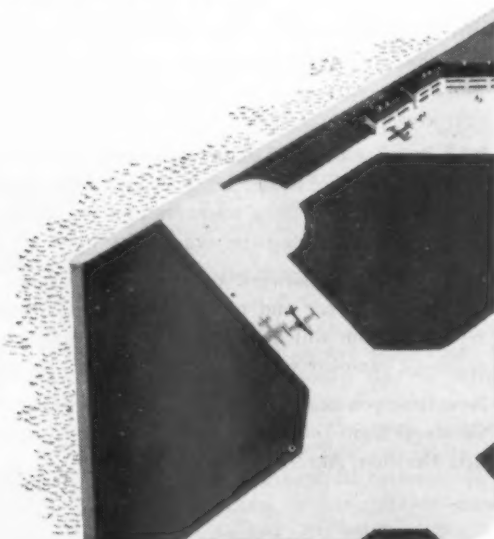
Lockheed has engineered into this trainer aircraft a wide variety of new safety features, including stall slats and an elevated tail with greatly increased surfaces. It is beyond a doubt *the safest jet airplane ever built!*

For easier training of even better jet pilots, this airplane has:—an unrestricted canopy... a wrap-around single windshield... rearranged and redesigned seats, including a telescoped ejection seat... and a greatly simplified cockpit and instrument panel—all providing the optimum arrangement for tandem training.

LOCKHEED

AIRCRAFT CORP., BURBANK, CALIF. AND MARIETTA, GA.

Look to Lockheed for Leadership



Mr. Ryan Campaigns Again

THE EISENHOWER ADMINISTRATION gets its second chance to name a member of the five-man Civil Aeronautics Board when the term of Oswald Ryan expires next December 31.

Mr. Ryan, a Republican who is the only original member of the Board, is running for reappointment even at this early date as though his very life depended upon it. By December 31 he will have served over 16 years and four months. He is now 66. At the end of a new six-year term he would be 72.

It is a question in our mind how far a member of a quasi-judicial body should go to campaign for his own reappointment. Mr. Ryan has already taken extraordinary measures to bolster up every conceivable political support, even many months away from the fatal date. A law firm in Indiana, Senator Homer Capehart (who intervened with the White House last year when a strong group in the White House wanted to remove him), House Majority Leader Charles Halleck, telephone calls and personal talks by Ryan himself to airline officials reminding them of past "favours," requests for help and intervention from everyone who might have political or other influence with the White House, all of this and more is going into an extraordinary do-or-die effort to obtain reappointment.

How far ethically can a CAB member go to line up political and industry support without incurring such a multitude of obligations that his role on a regulatory board is an outright farce? In the 16 years of Ryan's foothold in the CAB, he has frequently and openly been accused of tie-ups with various interests, tie-ups which (they say) cannot be broken. How much this destroys the whole moral fiber of a regulatory agency is evidenced by a look at past decisions where known enmities of certain Board members make it a certainty to determine their vote on any and every issue in which the targets of such enmities have a direct or indirect interest. Obligations and enmities cancel out judicial effectiveness in the public interest.

The case is not all against Ryan, of course. Few will deny that he has the most brilliant legal mind on the Board. His 16 years experience could count for a great deal if properly utilized. But even Ryan's best friends are prone to admit that his talents have often been misused or misdirected. He has never measured up to his potential.

The case against Ryan is rather large, we think. Underneath a somewhat deceptive absent-minded-professor and detached-legalistic demeanor is a pretty wily, experienced politician who has quite effectively controlled the CAB staff, as his colleagues have found to their sorrow through the years. And whatever the truth or untruth about the trade gossip concerning Ryan, the fact remains that such gossip is discrediting to a man in a quasi-judicial position. In addition, we cannot condone anyone going to such extraordinary lengths to campaign for himself for a reappointment to a *regulatory* position. We are somewhat taken aback by the desperation behind the campaign. Why, after all, is it so *terribly* urgent?

The Eisenhower Administration had best examine

the CAB closely, for it will find an old man's Board trying to regulate a new and verile industry. Reappointing Ryan would merely compound the age handicap.

The average age of the five CAB members is now 60. But Member Joe Adams is only 46. *The average age of the other four is 63½ years.*

The President and his top advisers produce an average age of only 56½ years. The Cabinet is a year older at 57½. The Federal Communications Commission, similar in many respects to CAB, has a 51-year-old average.

The average domestic airline president is only 53½ years of age. Yet in the CAB, Harmar Denny is now 68 and will be 73 on the expiration of his term. Lee is 62, with two more years to serve. Chan Gurney is 58 with four more years to go. Ryan would be 72 at the end of a new term. We submit that Ryan should be given a federal judgeship for which he is much better qualified.

The White House made many promises last year that it would "clean up" some agencies, including CAB. To date it has done virtually nothing for the latter. CAB has deteriorated into a hack political body in a great many respects although Chairman Gurney has been working very hard himself.

The air transport industry will be faced with greater and greater problems. Isn't it time to get in some new life, a new outlook, a sounder approach to air transport economics? Mr. Ryan should be willing to step aside after 16 years and give someone else a chance. Our hope for 1955 is a judgeship in Indiana for Ryan and a fresh, new, unobligated, unattached, and detached new look for the seat becoming available December 31.

Railroads Cost Plenty

THOSE RAILROADS which are staging a determined and distorted campaign against alleged subsidies to the airlines and other forms of transport seem to overlook the tremendous costs and inconveniences which they have foisted on the American public for a century.

Not long ago we flew into Chicago late in the afternoon. On the way downtown our bus was stopped for a long period of time while a freight train crawled along blocking highways and streets in every direction. Then it stopped for quite a spell. The number of cars, trucks, and buses held up were in the thousands. Our bus driver remarked that such delays happened late every afternoon during the rush hour. Although some progress has been made in constructing overpasses or viaducts, the fact remains that the railroads continue to cost commerce and the public millions of dollars in hours lost every year by blocking streets and highways. When it comes to costs, the rails can be charged up with plenty.

Arctic Sentinels

Thousands of miles away, long-range Northrop F-89 Scorpions stand guard night and day along the top-of-the-world route to America's heart, defending our homes and industry • These lethal USAF defenders will "scramble" at the first flash-warning from the polar radar chain. With deadly armament, latest radar, and ability to range over a defense zone up to 2000 miles in depth, they can strike, follow, harass, and destroy an invader hours before he can reach target • The Scorpion F-89 is America's most heavily armed fighter. It is a product of the precision team of Northrop men and machines.

NORTHROP

NORTHROP AIRCRAFT, INC. • HAWTHORNE, CALIFORNIA



Pioneer Builders of Night and All Weather Fighters



Industry Spotlight

• Change in Navy policy for procuring flight simulators is reportedly getting top-level consideration. New approach is to have the prime aircraft manufacturer handle simulator buying as part of the aircraft package, thus assuring that the final simulator and airplane will have the same pre-delivery modifications. Air Force policy is to award the prime contract to the simulator producer and make aircraft manufacturers responsible for keeping changes current.

• National Aeronautical Corp. of Ambler, Pa. reports that it is near the 9000 mark on sales of omnirange receivers. As of July 31, almost 8900 units had been produced.

• The Fairey Gyrodyne has not yet been "translated" from vertical to horizontal flight. This is a major problem of the configuration since forward flight takes place in autorotation. The rotor-tip pressure jets are at present very noisy.

• An air-conditioning unit for ground and flight cooling of the Aero Commander is being produced by Elliot Flying Service of Davenport, Ia. System weighs 20 pounds, sells for \$550 and costs about \$100 to install.

• New toe-operated hydraulic brake with improved feel has been developed in Britain by the Palmer Tyre company. Previous British military practice has been to use differential braking from the rudder pedals with control column master control.

• New Pratt & Whitney jet engine turbine blade alloy "Waspaloy," which reportedly has run more than 2000 hours in J-48 engines with outstanding results, is now being considered by other engine producers. Alloy is more than 50% nickel-based and meets requirements previously approached only by critical imported alloying elements such as cobalt, tungsten, and columbium. P&W is offering Waspaloy to other engine manufacturers without license or royalty fees.

• Current stage of autopilot development for VTO aircraft permits control in horizontal flight and in the maneuver to vertical position for manual descent. Further research is now being directed to achieve full automatic landing. The Lockheed XFV-1 is autopilot-equipped, but the Convair XFY-1 is not.

• An all-fiberglass single-engine lightplane now in final development stages by Taylorcraft, Inc. of Conway, Pa. is expected to make its first flight this month. Design has been under development only seven months and production may get under way as early as September.

• Market for low-power VHF omnirange (TVOR) transmitters among state aviation commissions is broadening at a fast pace. First large order for six units by Minnesota Dept. of Aeronautics went recently to Wilcox Electric Co. Bids for another 21 are now being negotiated by Nebraska, Kentucky, and Wisconsin combined.

• Lear, Inc. reportedly expects to be in production with its Arcon single-axis lightplane stabilizer within 90 days. Electron tubes in original model have been replaced with magnetic amplifiers.

• Early apprehension over the reliability and service life expectancy of gas turbine-driven airborne auxiliary power units has disappeared with the success of Solar Aircraft Co.'s Mars installation in USAF-Douglas C-124C transports. First Mars APU has been removed after 500 hours of virtually trouble-free operation, and AF has already effected major savings through spare parts cuts.

• Ungrounding of Piasecki H-21 helicopters was expected late last month with scheduled delivery of the first reinforced rotor blades by Parsons Corp. Aircraft Division at Traverse City, Mich. Blade failure that brought grounding order was traced to variations of the wood properties in the particular blade that failed, but reinforced version was ordered as a precautionary measure. Original blade was a Piasecki design built by Parsons under subcontract.

• Deliveries of Piper Aircraft Co.'s twin Apache four-place transport reached the 14 mark with the 54th airplane entering final assembly and 11 others in pre-delivery flight stage.

• Flight manual allowing a 1000-pound gross weight increase on Lockheed Lodestars using Wright R-1820-56-66, and -72 engines is being furnished by Aerodex, Inc. of Miami, Fla. New take-off limit is 19,500 pounds and landing weight 18,500.

AUGUST 2, 1954

**GREATER
SAFETY**



with the
TEMPCAL

**TEST OVER-HEAT DETECTORS
and WING ANTI-ICE SYSTEMS
... RIGHT ON THE PLANE!**

The TEMPCAL checks thermal switch and individual thermocouple ACCURACY.

TEMPCAL functionally tests thermal switches with their fire detection and anti-ice systems at their operating temperatures right on the aircraft... and its relay circuit makes it possible to check switches only on or off the plane. Additionally, using a selected part of the TEMPCAL circuit, cylinder head temperature thermocouples and their circuits to the flight deck instrument can be checked.

ACCURACY—TEMPCAL Tester temperature readings are made on a highly accurate potentiometer; guaranteed accuracy is $\pm 5^\circ\text{F}$ with temperatures ranging from 0° to 800°F . Heater probes used for cylinder head thermocouples are guaranteed accurate to $\pm 4^\circ\text{C}$ at 0° to 300°C operating temperatures.

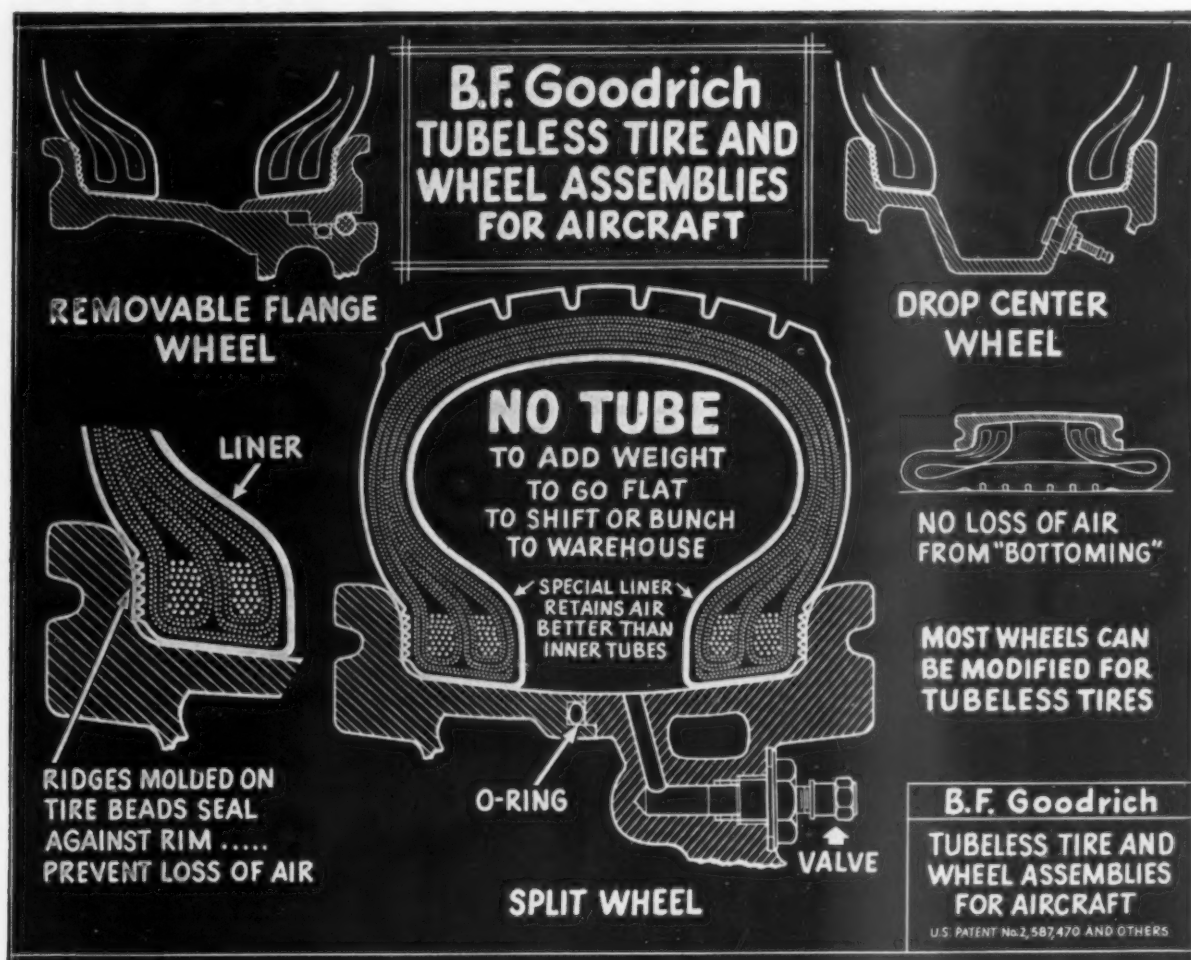
FASTER MAINTENANCE CHECKS—It is no longer necessary to take thermal switches to the "lab" for testing. TEMPCAL probes reach a temperature of 800°F in about 8 minutes for quick maintenance checks on the aircraft.

The production or maintenance engineer, pilot and cost accountant will readily realize the savings and safety factors resulting from TEMPCAL use. We invite inquiries concerning the TEMPCAL (as well as the JETCAL... for jet engine EGT system accuracy) and will be glad to have our engineering department help solve your heat problems.



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1009 Norwood
FORT WORTH 7, TEXAS



How Tubeless Tire for airplanes cuts weight, gives safer landings

TAKE OUT the inner tube and you do more than save weight, simplify assembly. You get a high-pressure airplane tire that's safer, too. B. F. Goodrich engineers were the first to develop and produce one. The blueprint above helps show how they did it.

Instead of an inner tube, the B. F. Goodrich airplane Tubeless Tire has a patented inner liner that's part of the tire itself. There is *no tube* to add weight. No tube to go flat—to bunch up or shift during landings and take-offs. Instead of tire and tube, there's only one unit to mount. Only one unit to warehouse, too.

The patented inner liner retains air much longer than conventional tubes. Ridges molded on the outside of the tire bead prevent air loss around the rim. On two-piece wheels, a rubber O-ring seal keeps air from escaping through sections. A special Navy "bottoming" test shows the new BFG airplane Tubeless Tire loses no air even when compressed flat to the rim.

The B. F. Goodrich airplane Tubeless Tire will soon be in general use on Grumman Cougar jets in Navy service. B. F. Goodrich is now speeding development for use on commercial planes, as well as other military aircraft. It's

another first in aviation tires from B. F. Goodrich, leader in rubber research and engineering.

Other B. F. Goodrich products for aviation include wheels and brakes, De-Icers, heated rubber, Pressure Sealing Zippers, Avtrim, inflatable seals, fuel cells, Rivnuts, accessories. *The B. F. Goodrich Company, Aeronautical Sales, Akron, Ohio.*

B.F. Goodrich
FIRST IN RUBBER

AMERICAN AVIATION

Viscount vs. Convair—What Are the Facts?

By ANTHONY VANDYK

HOW GOOD is the Viscount? That has been the question on the lips of airlines and aircraft manufacturers since this spring when various companies started making controversial and conflicting statements on the Vickers turboprop transport as compared with the Convair 340. Interest in the Viscount-versus-Convair hassle has intensified since Capital Airlines announced an order for three of the British planes with an option on a further 37.

In commenting on the controversy, Trans-Canada Air Lines has hit the nail on the head in saying that "each is better than the other in certain respects so that the airplane that one selects will depend upon the particular requirements of the airline. TCA, after studying both, selected the Viscount . . . but it was a selection that was made with full appreciation that the Convair does have certain advantages over the Viscount at the present time, the chief one being operating experience."

TCA says that "from a cost standpoint . . . the airplanes are fairly close together. The big advantage of the Viscount—and the basic reason for TCA selecting the Viscount—is that it will provide the public with a substantial advance in transportation from the standpoint of comfort and general appeal. The Viscount is also faster . . . (and) the speed differential is expected to increase as more experience is gained with the Dart and higher powers are made available. TCA also believes that a four-engine airplane is more attractive to the public than a twin-engine one when the airplane is carrying a big load of passengers."

It is TCA's belief that "unless one has traveled in a turboprop airplane—or a pure jet—it is difficult to describe the terrific passenger appeal that this new method of transportation has to offer. We believe that the instant a good turbo-driven airplane becomes available in any class, it will immediately become the public favorite."

TCA's comments on the Viscount-versus-Convair controversy deal with

many of the criticisms of the British plane contained in a statement issued in the spring by the Convair Division of General Dynamics Corp. (AMERICAN AVIATION, June 7) which claimed that the American aircraft is more economical and faster than the Viscount. Among the figures in the Convair statement were the following for direct operating cost per seat-mile:

	Miles	
	300	600
First class Convair (44 seats)	1.73¢	1.54¢
First class Viscount (40 seats)	2.80¢	2.50¢
Tourist Convair (48 seats)	1.58¢	1.41¢
Tourist Viscount (48 seats)	2.34¢	2.09¢

According to TCA's cost estimates, however, the direct operating cost of the Convair would be .05¢ cheaper than the Viscount, assuming both airplanes have the same depreciation period, and making numerous other assumptions to cover the fact that Viscount costs are for the most part estimated rather than based on experience like Convair costs.

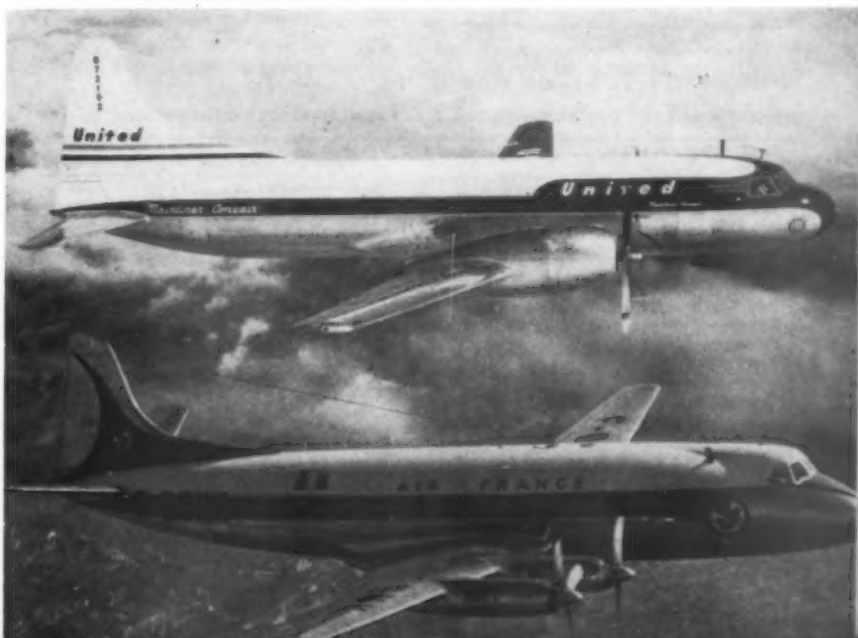
Comparing the two airplanes in

tourist versions (each with 48 seats), TCA says that the break-even load factor will be from one to two passengers less for the Convair but within two years after the Viscount comes into service on the Canadian routes, the British airplane will have a lower direct operating cost than the Convair with break-even points equal or in favor of the Viscount. (Convair claimed that the break-even points on a 300-mile trip for the first-class and tourist Viscount are 72.5% and 76.8%, respectively; for the Convair, 51.5% and 59%, respectively).

Summing up the direct operating costs situation for the two airplanes, TCA says that for its inter-city services it is expected that the Viscount will cost a little more than the Convair the first year of its operation; the two airplanes would be about equal the second year; and thereafter the Viscount will be expected to operate at a lower cost.

TCA points out that the Viscount's Rolls-Royce Dart engine is at the beginning of its career. Its rating has already been increased from 1400 to 1550 bhp since TCA ordered the Viscount. Its period between overhauls has also been increased from 400 hours to 700

Superimposed on a common background are the question-raising rivals.



hours and is expected to be 750 hours by this September and 1050 hours within a year. Darts are already being overhauled in 440 manhours as compared with 600 manhours for the Convair's Pratt & Whitney R-2800 under similar conditions, TCA states, adding that the cost of material for the Dart is already approaching little more than half of that for the American engine.

To illustrate some of the above points TCA gives some typical figures: The Viscount can fly a 500-mile trip with an 11,000-lb. payload at an average block speed of 257 mph at a cost of \$510. To break even, the Viscount would have to carry 34 passengers with zero revenue from cargo. Under the same conditions TCA calculates that the Convair could also carry 11,000 lbs. of payload at an average block speed of 228 mph at a cost of \$495.

In order to break even the Convair would have to carry 33 passengers, and TCA feels that although the American airplane requires one less passenger to break even, this is more than offset by the Viscount's appeal.

On speed, TCA says that its Type 724D Viscount has a block speed 25 mph faster than the Convair across practically the whole band of ranges from 300 miles to 1100 miles (Convair said that the Viscount was 9 mph faster for trips of 300 miles or less). The optimum cruising altitude of the Viscount remains at 15,000 feet for ranges up to 600 miles; it then rises sharply and is 22,000 feet for ranges above 700 miles. On TCA's operations almost all flight legs to be flown by the Viscount will be at least 400 miles (Convair stated that 85% of all airline trips are 300 miles or less).

Countering Convair's remarks on the high cost of the Dart's synthetic oil (\$13 a gallon compared with 75¢ a gallon for natural oil) and the frequent oil changes for the Dart (200-hour intervals against 1200-hour intervals for the R-2800), TCA says: "Firstly, the synthetic oil for the Dart

is 'optional' but will be used for cold weather operations. The standard oil for the Dart costs \$1 a gallon. The synthetic oil at present costs \$13 a gallon because there has been no demand for it. The oil companies have stated that the cost will fall drastically if the demand increases."

TCA reports that the Dart consumes less than two pints of oil per hour against the Convair's two gallons an hour and that the oil in the Viscount need only be changed at engine overhaul periods similar to that in the Convair.

TCA is not the only airline to get into the Viscount-versus-Convair hassle. British European Airways has come out with figures—"the most realistic we can obtain"—compiled in "an objective survey of the two airplanes, based on actual operating experience. The comparison appears in the box below. BEA points out that the operating cost of the two airplanes over a 600-mile run (as shown in the comparison) are "almost the same, but the Viscount has a substantially greater earning capacity and is usefully faster." For a shorter distance, such as London-Geneva (469 miles), actual experience quoted by BEA shows that the Viscount can normally complete the journey some 16 minutes faster than the Convair 240, block to block. Not only is the Viscount faster in the air but also, because it does not have to run-up, saves time before take-off, BEA points out.

A U. S. industry source, however, has doubted the validity of the BEA figures for application to North American conditions since they apparently do not take into account the following factors: fares are lower on this side of the Atlantic although crew and labor costs are about 50% higher; import duty is payable on foreign aircraft, engines, and spares (the present rate is 15%). Assuming these factors, the source claims that the Viscount's break-even load factor would be 98% (47-seat version flying a 600-mile trip).

VISCOUNT VERSUS CONVAIR—SPEED

Representative Ramp-to-Ramp Speeds (Average two-way)			
Trip Miles	Viscount		Convair 340
	mph		mph
75	129
109	113.8	133
213	183.8
215	187
339	180.9
341	192
489	217
490	221.8
552	221
563	221.8
685	236
691	240

*Source—Non-stop schedules from the June 1954 American Aviation Official Airline Guide (European Carriers for Viscount, U. S. for Convair).

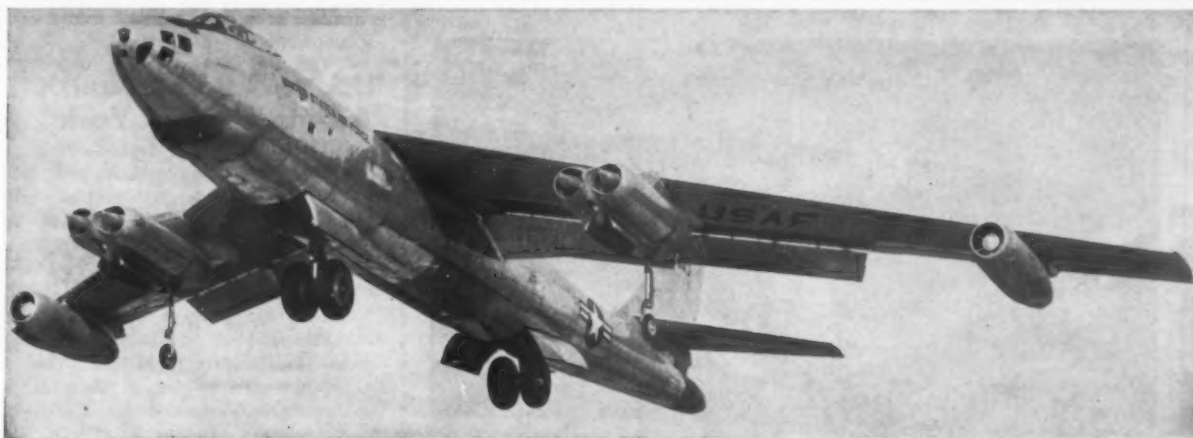
The source, a qualified economic planner, adds, "This very high break-even figure results from taking an average fare of 5.6¢ per passenger-mile, a direct cost (full 47 seats) of 2.75¢ per seat-mile, and an indirect cost (estimated) of 2.75¢ per seat-mile. This makes a total operating cost of 5.5¢ per seat-mile which, divided by the average fare of 5.6¢ per passenger-mile, gives a profit with full load of 0.1¢ per passenger-mile, or a break-even load factor of 98%. The BEA data for the Viscount, incidentally, reveal a break-even load factor of 51% assuming an average fare of 7.8¢ per passenger-mile, a direct operating cost (full 47 seats) of 2.0¢ per seat-mile, and an indirect operating cost 2.0¢ per seat-mile. Substituting an average fare of 5.6¢ per passenger-mile for the BEA's 7.8¢ figure and still using the 2.0¢ for both direct and indirect operating cost per-seat mile, the break-even load factor would be 71%."

The above figures show that there is still considerable disagreement on the Viscount's economics. In view of this, what are the reasons for buying the aircraft? Ireland's Aer Lingus, which now has four Viscounts in service, tells the answer: "With forecasts of total operating costs providing no sure guide to the relative desirability of the Viscount, Ambassador, and the Convair, the decisive factors became the revenue potential of the airplane, its suitability for future Aer Lingus routes to continental Europe, and its probable economic life in a competitive industry. On all three counts the advantage appeared to lie with the Viscount, the many attractions of which, from the passenger viewpoint, might be expected to stimulate the traffic demand on the routes it served, while its advanced design offered the best prospect of a long period in service as a fully competitive airplane on short and medium-haul routes."

• • •

VISCOUNT VERSUS CONVAIR—BRITISH EUROPEAN AIRWAYS' COMPARISON

	Type 701 Viscount	Convair 340
Number of pass. seats	47	44
Normal cruising speed	306 m.p.h.	253 m.p.h.
at		
Normal cruising height	17,000 ft.	10,000 ft.
on		
Normal cruising h.p.	3,724 e.h.p.	2,400 b.h.p.
Payload for 600-mile international sector	10,674 lb.	10,350 lb.
Reserve fuel for 600-mile sector	4,688 lb.	1,499 lb.
Gross weight	57,000 lb.	47,000 lb.
Aircraft (direct) operating cost for 600-mile sector	\$568.40	\$579.60
Operating cost per aircraft mile for 600-mile sector	94.36¢	96.60¢
Revenue for 600-mile sector at 65 per cent load factor	\$1,430.80	\$1,341.20
Surplus of revenue over direct operating cost for 600-mile sector	\$862.40	\$761.60
Block time for 600 miles	2 hours 23 min.	2 hours 45 min.



This Boeing B-47 had no trouble gaining altitude what with two 10,000-pound-thrust J57's mounted outboard.

J57 Engines Get High-Altitude Test Bed

Two Pratt & Whitney J57 jet engines have been installed by Boeing Airplane Co. in each of two B-47B Stratojet bombers for accelerated high-altitude testing of the 10,000-pound-thrust engine that powers the B-52 Stratofortress and the 707 jet tanker-transport.

The J57's are mounted in the outboard positions; the B-47B's two double pods, each containing General Electric J47-11's (5200-pound thrust), are retained in the inboard positions. In addition to the engines, the modified Stratojets have been equipped with numerous

B-52 parts, including B-52 nacelles reworked from double to single-pod design. (See photo above.)

One of the flying test beds is now in service with the Flight and All Weather Testing and Evaluation Branch of Wright Air Development Center at Wright-Patterson AFB, Dayton, O., and the other is at Boeing's Wichita Division, where the modification was made.

It was considered more economical to mount the J57's on the B-47's for the special tests than to use one of the eight-engine B-52 prototypes.

Airlines May Put Flight Time on Army 'Copters

An Army plan to turn 15 helicopters over to airlines for use on commercial routes is awaiting approval of Army Secretary Robert T. Stevens.

Purpose of the plan, which originated in the Army Transportation Corps, is to speed up attainment of time and technical knowledge by extensive use of more advanced helicopter models. The 15 rotorcraft would be of the same type. Gen. Matthew Ridgway, Army chief of staff, has approved the proposal.

However, Congressional approval may be necessary before the Army would be permitted to turn over helicopters for airline use. "Army approval means only that the Army is willing to go ahead with it and start negotiating," an authority said. CAA, CAB, ATA, and AIA have indicated a favorable reaction.

After the helicopters had been used by the airlines for about a year, 15 of a more advanced model would be substituted for more accelerated compilation of flight time. Although types to be used have not been determined, it was noted

that Sikorsky's H-19 (S-55) would probably be first. Later types would likely be Piasecki's H-21, Sikorsky H-34 (S-58), and Sikorsky H-47 (S-56).

Airports, New Weekly, Announced by AAP

Publication of AIRPORTS, a new American Aviation Publications weekly newsletter, has been announced by Wayne W. Parrish, editor and publisher, following a favorable response to a market survey mailing from airports, suppliers, airlines, and other interested industry members. First issue will appear on Friday, August 6.

The publication will be under supervision of Parrish and Eric Bramley, executive editor. Lois C. Philmus has been named managing editor and will continue as business flying and airports editor for AMERICAN AVIATION.

Subscription rate is \$25 a year with sliding scale rates for more than one copy. Classified advertisements will be accepted at the rate of 15c per word or 20c per word for block type.

AIRPORTS will provide complete weekly news coverage of all legislative, government, and local activities pertaining to airports and related activities.

Player Named to ATA Public Relations Post

Willis Player, who has held top public relations posts with Pan American World Airways and Northwest Airlines, has been named public relations director of the Air Transport Association, effective September 1. It is expected that he will be elected ATA's vice president-public relations at the next director's meeting.



Player

After serving for several years as PAA's public relations director, Player joined NWA in May, 1953, as vice president-public relations. He left the latter company last March when Harold Harris resigned as president. Since then he has been part-time special assistant in the office of James H. Smith Jr., assistant secretary of the Navy for air.

Beech to Test Foreign Jet, May Enter Field

A new jet aircraft from a foreign manufacturer will soon be test-flown by Beech Aircraft Corp. and may prove to be the company's first entrant in the military jet field, according to John P. Gaty, Beech vice president and general manager. He refused to indicate what country, manufacturer, or plane type is involved in the license agreement.

It was learned from other sources that the French SIPA Minijet, small basic trainer powered by a Turbomeca Palas, will be demonstrated in the U.S. shortly. Gaty would not comment on the possibility that the plane to which he referred was the Minijet.



707 Takes Wing; AF Studies Tanker Bids

Boeing's 707 jet tanker-transport, which has been undergoing flight tests since its first hop on July 15, may give the manufacturer an 18-24 month lead in the important jet refueling tanker competition now under study by the Air Force.

The 707 (tanker version is Model 717) does not meet the specific AF specifications, industry sources state, but is close enough that its advanced state of development may be a deciding factor. Powered by four P&W JT3-L engines (J57's) rated at 10,000-pounds thrust

each, the 707 has maximum gross weight of 190,000 pounds and cruising speed of about 550 mph. The first flight, from Benton, Wash., Municipal Airport, was made at 110,000 pounds gross.

The tanker competition, which may determine the prime contractor for one of the largest single production contracts in the foreseeable future, will be decided in September. Entries include Convair, Lockheed, Douglas, and possibly Fairchild and Martin. Convair has entered a delta-wing refueler, smaller than the 717, but said to carry more fuel.

Four Aircraft Firms Among Nation's Largest

Four aircraft manufacturers have total assets that put them among the nation's 100 largest manufacturing firms, according to National City Bank of New York: United Aircraft (\$298 million); Douglas (\$274 million); Lockheed (\$260 million), and Boeing (\$232 million). Also in the top 100 are Bendix Aviation Corp. (\$329 million), The Sperry Corp. (\$259 million), and Avco Mfg. Corp. (\$223 million).

PAA Places \$33 Million Order for DC-7C's

Pan American World Airways has placed a \$33 million order for 15 Douglas DC-7C's for delivery early in 1956. PAA is the first carrier to order the advanced model.

The DC-7C will have gross take-off weight of 140,000 pounds, landing weight of 107,000 pounds, fuel capacity of 7860 gallons. Weight increases, sub-

stantially above those of earlier DC-7 models, are made possible by increased climb power of Wright's forthcoming DA4 version of the turbo compound engine, and a major wing modification.

House Votes to Restore Airport Aid Money

Following a personal appeal by President Eisenhower, the House of Representatives, by a vote of 157 to 61, overrode its appropriations committee and restored \$22 million for the federal aid airport program. At presstime, the Senate had not acted on the bill.

In addition to President Eisenhower's request to Congressional leaders to restore the money, the measure was aided by a solid Democratic bloc led by Rep. Prince Preston (D., Ga.).

The appropriations committee eliminated the money from a supplemental appropriation because of dissatisfaction with CAA testimony on how and where the funds would be spent.

Air Transport Association has stated that \$120 million in local funds

is available or on hand to match federal appropriations.

U.S. to Allow Spanish Airline in New York

The U. S. has agreed to allow entry of a Spanish airline into New York, and the Foreign Operations Administration has given top-level approval to a program for modernization of the Spanish civil airways network.

In an agreement signed July 21, Spain agreed to give up its formerly authorized (but not operated) route from Madrid through Miami to Mexico City, in exchange for a Spain-Lisbon-Azores-New York line for Iberia, national airline. Another route goes from Spain to San Juan, Caracas, Caribbean and South American west coast points.

Final details of FOA's \$1.7 million civil airways program are being worked out. It is said to involve a complete communications and navigation system, including six VOR sites.

Comet III Makes First Flight in England

The de Havilland Comet III, long-range large-capacity development of Comet I and II, made its first flight (1 hr. 25 min.) on July 19. Powered by four 10,000-pound-thrust Rolls-Royce Avon RA26 engines, the plane is scheduled for service in 1957.

U.S. and Britain Plan Exchange of Missiles

Exchange of guided missiles between U. S. and Britain has been indicated by Defense Secretary Charles E. Wilson. Although the two nations are not quite ready for acceptance of each other's missiles, the plan is to bring about a "standardization on certain types" for the benefit and economy of both countries, he said.

Three Airlines Move To Increase Fleets

One U.S. and two European airlines were taking steps last week to increase their aircraft fleets.

British Overseas Airways Corp. was negotiating to acquire eight more Boeing Stratocruisers (six from United Air Lines and two from Pan American) and eight additional L-749 Constellations (including four from Qantas Empire Airways) for use pending resumption of jet Comet services and delivery of its Britannia fleet.

KLM Royal Dutch Airlines is reported to be negotiating with Lockheed for three more Super Conquies L-1049G's) with an option on a fourth.

Northwest Airlines bought a DC-6A from Canadian Pacific, and will use it in Seattle-Anchorage tourist service.

AF Drive to Speed Fund Obligations Begins

By HARRY S. BAER, JR.

AN AIR FORCE program to speed up earmarking of funds for aircraft and related procurement is now underway, calling for \$1 billion of fiscal year 1954 and prior year funds to be obligated during the first four months of FY '55.

This AF drive to accelerate obligations has already taken effect, according to Roger Lewis, assistant AF secretary (materiel), who recently made public a fiscal year-end account of AF purchasing of aircraft and related equipment.

Estimates for obligations during the month of June alone indicate about \$900 million net, Lewis said, whereas a net of only \$820 million was obligated in the preceding 11 months.

Acknowledging that obligations have been delayed during the past fiscal year, Lewis noted, however, that the AF has conducted "a rather sizable amount of obligational activity."

He backed his statement with the following figures which were compiled as of June 30, 1954:

- A \$3.7 billion estimated gross obligation figure for FY '54.

- A \$1.7 billion estimated net obligation figure for FY '54.

- A \$4.5 billion unobligated carry-over, of which \$1.65 billion will be applied to the FY '55 program with the remaining \$2.85 billion to be used for FY '54 and prior year program requirements.

Lewis estimated that about 75% of FY '54 program funds will be obligated by October and also noted that more than 90% of FY '53 funds have been obligated.

The \$2 billion difference between gross and net obligations (\$3.7 minus \$1.7 billion) represents AF deobligations incurred during the past fiscal year. The term, "deobligation," which Lewis referred to as "jargon of the budget department I'm just beginning to understand myself," refers essentially

to cancellations during the year.

More comprehensively, however, major reasons for the deobligations include (1) contract terminations, (2) spare parts cancellations, and (3) price redeterminations and accounting adjustments. It's money which the AF is now scurrying to get obligated.

"The slower rate of obligations reflected by the total obligation picture as of the end of the fiscal year is, in general, the result of our efforts through the year to return to sounder procurement practices, both in our methods of contracting and the timing of our order placements," Lewis explained.

He cited four examples:

(1) Timing order placements to reorder lead-time requirements, making it possible to defer obligations in many cases and putting orders on a more current basis.

(2) Deferment of certain follow-on orders due to production slippages.

(3) Examination of spare parts provisioning methods which showed large amounts from previous years' appropriations against which definitive contracts had not been signed, and the resultant delay imposed on obligating for reorder items.

(4) Increased emphasis on writing firm, definitive contracts rather than letters of intent (which are no longer considered obligations when used) a procedure which requires more time for the completion of an obligation.

"When you give a man a letter of intent," Lewis said, "you say, 'Look, get started on this thing, I don't know what it is, you don't know what it is, but get going and here's a hundred million dollars.'"

"That's necessary under certain conditions. I would have done exactly the same here three or four years ago. But when you get a little better organized, you don't have to do it. You should stop the practice. And if you

have the time to write a formal, final order, where you fight out all the terms and conditions before you spend the money, you get a better job and the contractor is happy."

Lewis' forward purchasing policy, not placing an order until necessary to protect lead time and fill the manufacturer's production, has given the AF more flexibility to accept engineering changes and a greater ability to schedule its buying through each year. It has also reduced lead time.

In providing estimates on this reduction in the aircraft area, the assistant AF secretary said a "good working number" is now about 18 months, compared to 21 months previously.

Largest single item in cancellations during FY '54, Lewis said, was in the aircraft engine business. It amounted to about \$800 million or 40% of the \$2 billion deobligated. With the improvement of turbojet engines, the AF found itself with an excess number on order last fall and quickly made the sizable slash.

A big portion of the excess \$2 billion of FY '54 money is being earmarked for North American F-100's, Lewis indicated.

Asked if the lagging obligations during the past year would eventually result in less new money approved by Congress in the future (such as the \$5 billion lopped out of the AF appropriations request last year), Lewis responded, "I don't think so. The buyer has got a requisition out there. Air Materiel Command has actually been negotiating and contracting with the supplier, and it just doesn't have the thing finalized."

Lewis offered assurance that the delayed obligations will be obligated, noting that "plans to do the obligating are in operation and we are going to obligate this money in accordance with the requirements of the program."

"One of the things we're going to do is stay light on our feet," he emphasized. "We're going to protect the structure so that we can meet any reasonable change and forced requirements that are given us. I'm talking now from the industrial side of the house, and we're going to watch that very carefully."

"Now that we're through with the inventory stage (that is, production toward the 137-wing goal is essentially underway), we're really emphasizing technological advancements," Lewis explained. "We want better airplanes and all kinds of weapons and equipment—and we want them just as quick as we can get them."

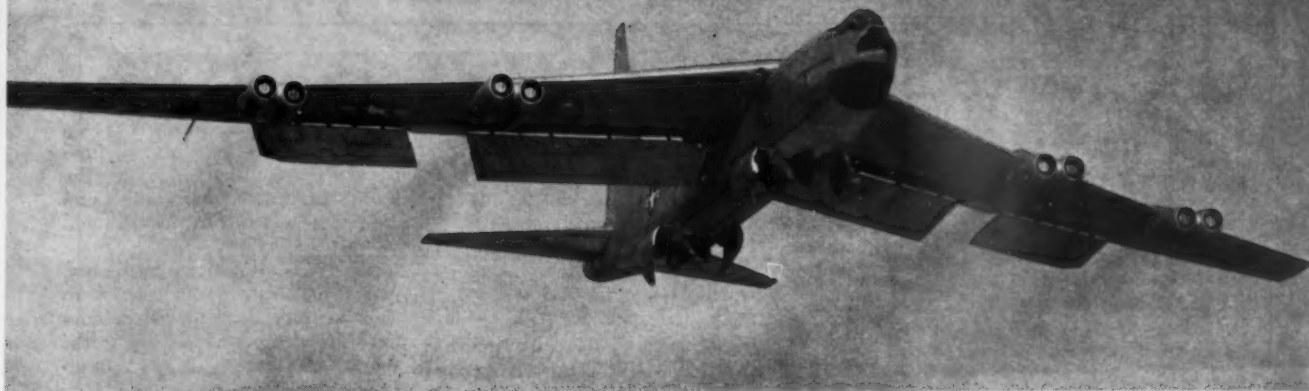
AF CUMULATIVE OBLIGATIONS—FY 1954

(Aircraft and Related Procurement)

IN BILLIONS OF DOLLARS

FY 1954	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE
CUMULATIVE GROSS OBLIGATIONS	.188	.408	.474	.628	.908	.981	1.139	1.347	1.840	2.022	2.640	3.700*
CUMULATIVE DEOBLIGATIONS	.038	.252	.362	.494	.603	.783	1.035	1.182	1.445	1.652	1.820	2.000*
CUMULATIVE NET OBLIGATIONS	.150	.156	.112	.134	.305	.198	.104	.164	.395	.370	.820	1.700*

* ESTIMATED



Boeing's B-52: The big intercontinental bomber should begin rolling off the Wichita line early in 1956.

Boeing-Wichita Races to Set Up Complete B-52 Second Source

By ROBERT M. LOEBELSON

WICHITA, KAS.—The mammoth, 29,000-employee Boeing Airplane Co. plant here, already nearing the point where it will have delivered 1000 B-47 and RB-47 Stratojets to the USAF, has started concentrating on the even-larger eight-jet B-52 in hopes of beating Boeing-Seattle's three-year lead time between the initial order and the first production model.

Boeing-Seattle got the first USAF order for the B-52A on March 15, 1951, and rolled out the production plane on March 18 of this year. J. Earl Schaefer, vice president and general manager here, says he is convinced that the midwestern facility can cut several months off that time because of close liaison with Seattle.

Since the Wichita plant was named a second-source producer for the B-52 Stratofortress last September 28, it would appear that the Air Force is figuring on the first Wichita-produced intercontinental bomber early in 1956.

Schaefer reports that this second-source program will differ from others in the past in that Boeing-Wichita will start production from scratch. Previous policy has been to have the prime source deliver almost all parts for the first batch of airplanes to give the alternate producer experience in assembly. But in this case, Schaefer declares, "the first Wichita B-52 will be 90 or 95% Wichita-built."

Boeing-Wichita has already received tons of blueprints for the B-52 from Seattle and has obtained more than 700 plaster casts of Seattle tools to speed die-making. In fact, the midwestern plant has already produced its first Stratofortress parts, and contracts have been let to five major aircraft firms for 25% of the airframe weight.

Winners of the B-52 subcontracts, awarded on a competitive fixed-price basis, include:

- Cessna Aircraft Co., Wichita—Horizontal stabilizers.
- Convair-Fort Worth—Outboard wing panels and vertical fins.
- Temco Aircraft Corp., Dallas—Body sections.
- Bell Aircraft Corp., Buffalo—Nacelles for the P&W J57 engines.
- Aeronca Aircraft Corp., Middle-town, Ohio—Rudders and elevators.

In line with Air Force efforts to create a true second B-52 source, Wichita has tried not to use the same subcontractors employed by Seattle. This will mean dual sources not only for the complete airplane but for subassemblies and parts, wherever possible.

The Wichita facility is putting up a new USAF-owned 750,000-square-foot materials building (slated for completion in June, 1955) for the B-52 program. In addition, thousands of feet of floor space in the main production plant are being diverted from B-47 to B-52 work every week-end.



J. E. Schaefer

plant, as far as could be ascertained, holds only a B-52 contract.

Number of B-52's and RB-52's to be produced at both Boeing plants is naturally classified, but Harold E. Talbott, USAF secretary, has indicated that there will be more than seven heavy

bomber wings in the 54 wings scheduled for the Strategic Air Command in the USAF's 137-wing program. Because the USAF places the number of planes in a heavy bomber wing at 30, this could mean that the two plants will deliver at least 250 of the giant bombers.

Schaefer was reluctant to discuss either the growth potential of the Stratofortress or its capabilities. He did say, however, that the B-52 was engineered for even more powerful engines than the eight 10,000-pound-thrust J57's, leaving interviewers to conclude that the plane might eventually end up with either uprated J57's or possibly Wright J67's. (The J67, with between 13,000 and 16,000 pounds of thrust, is being considered by USAF as a replacement for all planes currently using the J57.)

The Wichita general manager also said he could not talk about the B52's potential ability to carry air-to-ground and/or air-to-air guided missiles. SAC Commander Gen. Curtis LeMay has stated that the B-52 has a single-purpose—to carry the H-bomb to Russian targets—but that does not obviate the possibility that the H-Bomb can be housed in an air-to-ground missile which would be launched by the B-52 several hundred miles away from the target. In addition, there may be times when the B-52 will be without protection from its planned escort, the McDonnell F-101, and it may be desirable to fit the B-52 with air-to-air missiles.

In any case, if Boeing-Wichita can deliver the B-52 as it produced the B-47 (on-schedule for 32 consecutive months), the Strategic Air Command will be ready to meet any Russian threat after June 30, 1957. This appears likely since, as one Wichita engineer put it, "We respect the problems involved in the B-52 but it doesn't scare us."

It also seems certain that the USAF's unit cost of the B-52 in fiscal 1955 (\$8.7 million at Seattle, \$15.7 million at Wichita) will drop well below the current average price of \$9.5 million per airplane.

• • •



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C-W, Temco Awarded Big Contracts

Ten million dollars in contracts for one manufacturer, new plans for expansion, and a major subcontract highlighted the business news as July drew to a close.

•Curtiss-Wright Corp. received five USAF contracts worth a total of over \$10.1 million, with \$7.5 million slated for Wright Aeronautical engines, parts, and tools, and the remainder going to C-W's electronics division for a simulator and parts. C-W is also considering creation of a new division to manufacture electronic and ultra-sonic equipment under Swiss and German license.

•Temco Aircraft Corp. received one of the largest orders in its history as Republic Aviation awarded it a multi-million dollar contract to produce aft fuselage sections for the F-84F fighter-bomber. The contract will run for more than a year. Temco will also overhaul and modify 40 North American T-6G's from trainer to liaison configuration (LT-6G) for the Air Force at its Greenville, Tex., plant.

On other business fronts:

•Beech Aircraft Corp. will build 290 of the T-34B Mentor trainers recently contracted for by the Navy at a contract price of \$8.9 million. Beech has also received contracts for \$7 million in C-26 portable generators and newer MD-3 units for use as outside power sources on Boeing B-47's and other jets.

•Bendix Aviation Corp. has received a \$200,000 order from United Air Lines, described as the largest of its kind ever placed, for 286 glide slope receivers. The units (NM-100A's) will equip the UAL fleet.

•Six TVOR units will be installed in Minnesota by Wilcox Electric Co. of Kansas City. Installations will be finished by mid-October.

•Collins Radio Co. has received eight new orders for VOR installations from the City of Santa Monica, Calif., the Netherlands, Canadian Pacific Air Lines, Pan American, Radio Aeronautica

Mexicana, Braniff Airways, and the Army Signal Corps.

•Summers Gyroscope Co. has an Army Signal Corps contract to develop two lightplane autopilots, as well as a joint USAF-Army contract for a third type.

•Dallas Airmotive, Inc. has been awarded a contract to overhaul P&W R-1340-57 helicopter engines for the U.S. Coast Guard.

•Convair has sold a number of twin-engine C-131B's to the USAF for use as laboratories for testing electronic equipment. Deliveries start late this year.

•Aeroproducts Operations, Allison Division, G.M., will supply propellers for conversion of Fairchild C-119F's to C-119G's; conversions will begin in October.

•Pacific Airmotive Corp. has opened a branch office at Stapleton Airfield, Denver.

Big Changes at Hiller Under Bolton's Lead

Management lines are being tightened at Hiller Helicopters at Palo Alto, Calif. following the recent appointment of Edward T. Bolton to the post of executive vice president and general manager.

A major policy change will bring more fabrication into the Hiller plant. Previously, the Hiller policy had been to subcontract up to 90% of the work on the company's helicopter and perform only the final assembly in the home plant.

Hiller already has moved manufacture of such major components as the pan and the boom into its own plant. Hiller also is doing some of its sheet metal work and some machine work. Ultimate aim is to reduce subcontracting to approximately 25%.

"We have no intention of trying to make everything," said Bolton. "Transmissions, for example. Moreover, we value good subcontractors and we intend to keep a representative quota of subcontracting under all circumstances."

Employment is on the upgrade. As of June 1 Hiller had 550 workers. Within two months Bolton had it up to 615, most of the increase being in direct labor.

A budget of \$325,000 had been approved by the Hiller board for expansion. Only about \$25,000 will be spent on new construction, the rest being devoted to equipment and to improvement of existing facilities.

Hiller has a substantial H-23B backlog on a stretched-out Army contract, and it has a commercial version of the same machine called the 12B. It recently delivered two more 12B's to Philippine Air Lines. Hiller also has development contracts with the Navy and it is in progress on CAA type certification tests on its ramjet Hiller Hornet. It is building a test quantity of five of these ramjet craft for the Army and the Navy.

Douglas Profits Soar; Costs Rise Hits Airline

A sharp increase in its six month profit to \$19,178,939 was reported last week by Douglas Aircraft Co., while at the same time the largest U.S. airline, American Airlines, showed a decreased net due to lower load factors and rising costs.

•Douglas' \$19,178,939 profit for the first six months (ended May 31) of its fiscal year compared with \$10,042,975 net in the same period last year. Sales totaled \$493,892,297 compared with \$458,778,761. Directors declared regular quarterly dividend of 62½¢ plus an extra dividend of 87½¢, payable Aug. 25.

•American's profit after taxes for the six months ended June 30 was \$5,014,035 against \$6,658,150 last year. The 1954 results included \$903,000 profit on sale of four DC-4 cargo planes, and \$583,000 from changing estimated useful life of DC-6B's from five to seven years. Revenues were \$111,236,667 compared with \$98,849,516. Passengers totaled 3,052,000, up 10.2% over last year, passenger-miles were up 15%.

Other financial news:

Republic Aviation Corp. reported six-months net of \$4,590,544 on \$166,901,615 sales against \$3,739,300 profit on \$188,299,571 sales in same 1953 period. Taxes for the two periods were \$4,893,000 and \$8,628,206, respectively.

Piper Aircraft Corp. earned \$215,644 on \$8,119,084 sales in nine months ended June 30, against \$245,416 on \$9,241,082 in same period a year earlier.

Thompson Products and subsidiaries reported \$6,490,502 profit for six months against \$5,357,618 last year. Reduced shipments of aircraft products lowered sales from \$169,416,436 to \$144,410,319 this year.

Beech Aircraft Corp. voted two dividends of 25¢ each. One of these represents the last of the omitted dividend payments, the other is the regular dividend for the three months ended June 30. The two payments "restore the average earnings of Beech stock for the past several years."

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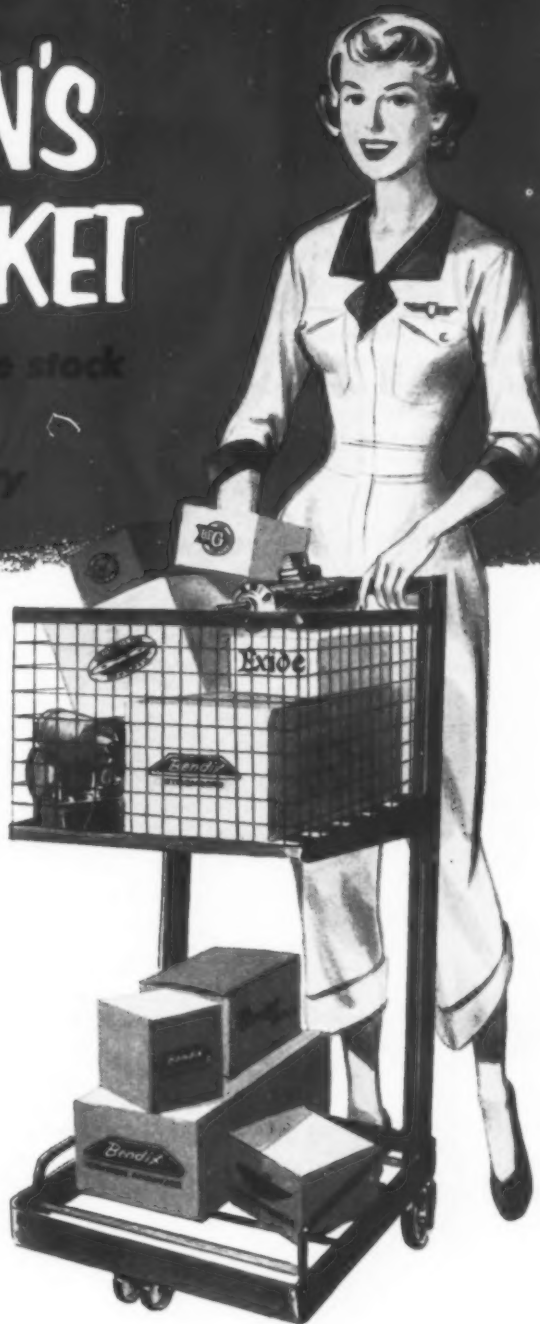
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How much revenue for advertising and services?

By ERIC BRAMLEY

WHAT PERCENTAGE of their revenues do U. S. airlines use to attract and develop business through advertising and publicity, give service to passengers, and operate traffic-sales departments? AMERICAN AVIATION's study of expenses filed with CAB shows that in 1953:

- For every domestic passenger carried, the Big Four (American, United, TWA, and Eastern) spent from 37.9¢ to 59.3¢ on advertising space (UAL's figure includes Hawaiian operations; company did not divide advertising expense between domestic and overseas).

- Five other trunks spent in the same range as the Big Four to attract their shorter haul customers. Two others were considerably higher; two were lower. International and overseas operators, with long hauls but less passengers, were substantially higher.

- Big Four spent from 1% to 1.4% of total operating revenues to buy adver-

tising space, from 2.1% to 2.7% for all advertising and publicity activities.

- These same carriers used 8% to 10% of total revenues for operation of traffic-sales departments. From 6.1% to 7.4% of passenger revenue was spent on passenger service.

- Smaller trunks for the most part were somewhat higher in percentage of revenues spent on advertising space and on all advertising and publicity, but were roughly in the same range as the Big Four on traffic-sales and passenger service. International and overseas operations were generally higher than the Big Four's domestic averages.

Following is a description of the accounts reported to CAB which AMERICAN AVIATION used in the analysis:

Account No. 1—Advertising Space: Cost of all space (only) intended to increase air travel, disseminate air travel information, and publicize services. Includes newspapers, all magazines, directories, guides, etc. Not covered are cost of cuts and mats and cost of producing ad copy, which are listed under an "Advertising—Other" account. Salaries of

employees engaged in producing ad copy and related activities are not included.

Account No. 2—Advertising and Publicity: All expenses incurred to create public preference for the airline and its services, promote use of air transport, and stimulate development of the air transport market. Includes advertising space (above) and "other advertising" (calendars, air mail and baggage stickers, billboards, maps, direct mail, displays, films, etc.).

Account No. 3—Traffic and Sales: All sales, ticketing, and reservations expenses. Includes salaries and expenses of personnel primarily engaged in selling transportation, processing passengers on ground, soliciting traffic, issuing tickets, reserving space, scheduling flights, and preparing and issuing tariffs.

Account No. 4—Passenger Service: Expenses incurred in providing meals, sleeping accommodations, and other facilities and services contributing to comfort, safety, and convenience of passengers while in flight; also passenger's interrupted trip expense, passenger liability insurance, injuries, loss, and damage expenses in excess of insurance coverage. • • •

Comparison of Revenue Spent by U.S. Airlines for Advertising, Sales, and Service—1953

Company Reporting	From Account #1				From Account #2		From Account #3		From Account #4
	Adv. space expense per:		For Adv. space:		For Adv. & Publicity:		For Traffic & Sales:		For
	Rev. Pass.	Rev. Pass. MI.							Pass. Service
			% Pass. Rev.	% Op. Rev.	% Pass. Rev.	% Op. Rev.	% Pass. Rev.	% Op. Rev.	% Pass. Rev.
American	37.9¢	.0006¢	1.2	1.0	2.5	2.1	9.9	8.6	6.5
Braniff (dom.)	38.3	.0010	1.7	1.6	3.0	2.7	10.6	9.6	9.1
(int.)	481.0	.0020	2.9	1.9	7.9	5.2	16.8	11.1	8.8
Capital	41.4	.0013	2.3	2.0	3.8	3.4	13.3	11.7	7.1
Colonial (dom.)	21.6	.0008	1.4	1.2	2.8	2.3	14.2	12.1	9.9
(int.)	127.0	.0016	2.8	2.6	7.5	7.0	15.4	14.4	8.7
Continental	47.4	.0011	1.9	1.6	3.9	3.3	7.9	6.6	7.6
Delta-C&S (system)	58.0	.0012	2.2	2.0	3.8	3.4	10.8	9.6	7.5
Eastern (dom.)	41.9	.0008	1.6	1.4	2.5	2.3	8.6	7.9	6.1
(int.)	126.0	.0008	1.7	1.4	2.8	2.3	4.0	3.4	6.2
National (dom.)	101.0	.0014	2.9	2.6	4.1	3.6	11.7	10.3	6.3
(int.)	165.0	.0035	5.4	5.0	8.3	7.7	16.4	15.2	6.5
Northeast	18.8	.0009	1.4	1.0	3.4	2.4	15.4	11.2	7.5
Northwest (dom.)	97.9	.0013	2.6	2.3	2.6	2.4	9.1	8.2	6.7
(int.)	109.0	.0006	0.9	0.5	9.6	4.9	17.1	8.8	9.9
TWA (dom.)	59.3	.0007	1.5	1.3	3.1	2.7	11.4	10.1	6.6
(int.)	196.0	.0007	1.0	0.7	6.5	5.0	19.1	14.7	7.3
United (system)	43.4	.0006	1.2	1.0	2.5	2.1	11.4	9.9	7.4
Western	57.3	.0013	2.4	2.1	3.7	3.3	10.1	9.1	7.3
PAA (Latin Am.)	119.0	.0012	2.0	1.3	5.0	3.3	18.2	12.0	9.8
(Atlantic)	218.0	.0020	2.7	1.9	6.3	4.4	16.2	11.3	8.5
(Pacific)	414.0	.0012	1.8	1.1	5.1	3.2	14.2	8.8	8.8
(Alaska)	43.6	.0004	0.8	0.4	4.1	2.2	16.7	9.0	14.3

NOTE: (1) United and Delta-C&S did not separate advertising expense of domestic and overseas operations.





(2) Expenditures listed above (except in Account #4—Passenger Service) are compared with total operating revenues (which include mail revenue) because a small amount of such expenditures would be applicable to mail—i.e., joint industry air mail advertising, air mail stickers, etc. Because a very high percentage of expenses all four accounts would be attributable to passengers, however, all are compared with passenger revenues.

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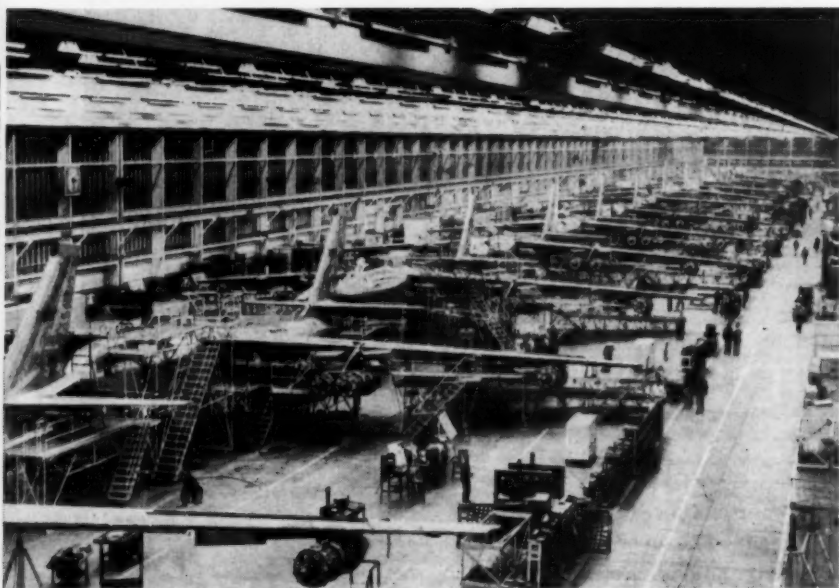
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1951: This is what Lockheed found—46,086 stored items.

From Storehouse to . . .



1954: The B-47 final assembly line at Lockheed-Marietta.

. . . Georgia's Biggest Industry

Lockheed-Marietta, busy with B-47 production and modification, gets set to build C-130 turboprops.

By WILLIAM D. PERREAULT

GEORGIA, "the peach state," now finds that its largest single industry is aviation. The Georgia Division, Lockheed Aircraft Corp., with a weekly payroll of over \$1 million, employs some 14,800 people and places more than 10% of its \$39 million dollar annual business volume with Georgia vendors.

But state officials have seen aviation business come and go and have looked

on Lockheed-Marietta's growth with cautious enthusiasm. More recently, with the Georgia Div.'s backlog in the \$600 million category spread over three well-diversified projects, enthusiasm is running high.

The crowning victory for Georgia, as well as for officials and employees of the mushrooming division, was the opening of negotiations by the parent Lockheed Aircraft Corp. for outright

THE MAN (AND THE PLANE) ON THE COVER

Daniel J. Haughton was born in 1911 in Walker County, Ala., and grew up in rural surroundings 30 miles from Birmingham. Typically, he worked in his father's store, cut timber, farmed and peddled papers, and, when old enough, worked in the coal mines.

He attended the University of Alabama, majoring in accounting, and started his business career with a California construction company as office boy in 1933. He took his first aircraft job—cost accountant with Consolidated Aircraft Corp.—in 1936.

In 1939 Haughton joined Lockheed as coordinator, setting up procedures. Progressively, he became works manager, assistant general works manager, and assistant to the v.p.-manufacturing. He was named president of the Airquipment Co. and Aerol Co., Inc., Lockheed subsidiaries, in 1949.

In 1951 Lockheed picked Dan Haughton as assistant general manager for its new Georgia Division at Marietta. He currently is general manager at Marietta and a Lockheed v.p.

The C-130, huge turboprop-powered Air Force transport, will make its first flight this month at Burbank. It will be produced by Haughton and team at Lockheed-Marietta.

purchase of Government Plant No. 6, as this \$40 million facility is called. This gave the ultimate measure of assurance to Georgians that Lockheed president Robert E. Gross meant business when he spoke of Lockheed-Marietta as a permanent part of the company's plans.

More than any other factor, the actual accomplishments of the Georgia Div., under leadership of D. J. (Dan) Haughton, vice president and general manager, have justified the optimistic outlook on the future.

- Production of Boeing B-47's, until now the mainstay of the division's activities, has moved ahead on schedule, and the company has been cited as the low-cost builder on the Stratojet bomber which is also produced by Boeing and Douglas.

- Boeing B-29 modification, the division's first project which was phased out in late 1952, was completed ahead of schedule and below projected costs.

- Work on the first production C-130, the U.S. Air Force's initial turboprop transport designed for this type power, is ahead of current schedules and should be completed in late spring of 1955. The two prototypes are under construction at Burbank and first flight test is due this month.

- Initial work on a modification program for some 283 (this figure is

from Commerce Dept. contract information and may not be all-inclusive) Boeing B-47's is getting under way this month.

All this activity is going on in a 45-acre plant which in January 1951 was simply a storage house for thousands of machine tools. It was on Jan. 4 that the Air Force announced that Lockheed had been assigned the World War II facility (where Bell Aircraft had built 669 B-29's) to Lockheed. The program was for Boeing B-47 production but this was still some time off. Meanwhile the giant warehouse had to be emptied of machine tools, and a B-29 decocooning and modification program was scheduled into the facility as a starter.

Jim Carmichael, then president of Scripto, Inc. (pen and pencil manufacturers), and wartime works manager for Plant No. 6 while with Bell, was called on as general manager of the new division, and Dan Haughton of the parent corporation in Burbank, Calif., was assigned as his assistant. While their newly formed team undertook the gigantic job of disposing of machine tools and setting up a modern production facility, Lockheed Aircraft Service handled the job of depickling B-29's at Pyote, Texas, and getting them ready for the one flight to Marietta.

The B-29's were flown into Dobbin AFB which forms a large portion of the 2830-acre base on which the production facility is located. This modification contract gave Lockheed the springboard for its B-47 production program. Although a few people were brought in from the parent corporation, most employees were local people, largely unskilled in machine and related trades. Scope of the training job handled by Lockheed is indicated by the more than 12,000 persons put through specialized courses of every type. More than one-and-a-half million man-hours of training have been invested in the buildup program which remains a continuing operation.

By April, 1951, the division was under way on B-47 production. Lockheed produces some 40,000 parts for the B-47, about 55% of total aircraft weight, with Ford at Kansas City (making wings) and AVCO at Nashville, Tenn. (making empennages) being the major subcontractors. Bell at Buffalo makes the intricate struts which mount the General Electric J-47 engines to the wings.

Although Lockheed has been cited as the lowest cost builder of B-47's, Haughton is cautious about using relative cost figures—there are too many variables including initial design, tooling, modification programming, etc. He's more apt to turn this discussion over to the manufacturing manager H. Fletcher Brown, long time works manager for Boeing-Wichita and more re-

cently from Curtiss-Wright, who watches production.

Brown is short on generalities, long on facts. In production manager R. A. Mackenzie's shop they'll show you man-hour and production curves. These show they are now producing the same number of B-47's with 110,000 man-hours work as they used to with 150,000. They have been able to obsolete the industry-recognized 80% learning curve (showing the reduction in man-hours

present USAF plans materialize.

Many of the B-47 production and B-47 modification projects are closely allied, and it has been determined to use parallel work lines. To do this the final B-47 production line, which extends 2000 feet along the full length of plant B-1, is being displaced, and this area will be used for modification work. To simplify the job a 300-foot section of factory wall is being torn down and hangar-type doors are being



Part of the Lockheed-Marietta team: Top row (from left)—K. V. Sampson, Ass't Gen. Mgr.; A. C. Kotchian, Dir.-Admin.; Fletcher Brown, Manufacturing Mgr.; B. A. Martin, Flight Operations-Chief Pilot. Bottom row—W. G. Myers, Contract Admin. Mgr.; R. W. Middlewood, Chief Engineer; B. R. Haverstick, Master Scheduling Mgr.; J. P. Lydon, Dir. Ind. Relations.

as learning stabilizes), replacing it with a 73% curve. And the trend is continuing downward.

Much of this is the result of a spirit of teamwork that extends from Haughton and his assistant, K. V. Sampson, down through shop superintendents, foremen, and individual workers. Production control is very tight with a system of production checkpoints in both major and sub-assemblies used to check actual work against planned requirements. Weekly reports itemizing current production status serve as constant reminders of jobs well done or those needing more effort.

Haughton took over as general manager in January, 1952, when Carmichael found it necessary to get back to Scripto. Carmichael has since been elected to the Board of Directors of Lockheed and acts as "resident adviser" at Marietta.

The main job at hand is realigning the plant's productive facilities for the three-pronged program of C-130 production, B-47 production, and B-47 modification and maintenance. The latter contract includes both modification and IRAN (inspect and repair as necessary) work extending into late '56 or early '57, and is likely to be further extended by straight IRAN work if

installed. Thus, modification planes can flow from ramp areas, where initial work will be performed, through the shop, and out onto the ramp in a continuous cycle.

In the rearrangement of B-47 production into a U-shaped line, the final assembly section coincides with the completion end of the modification line and feeds planes through the new doors onto the ramp. When this rearrangement is complete early in November, newly produced planes will be towed along a taxi strip to Dobbins AFB pre-flight hangars, even as now, for final production tests.

This U-shaped production line extends about 1000 feet along the building's length, providing about equal space at the far end of the same two bays for C-130 production. It is felt that the turboprop-powered transport will occupy about 20% of the plant's productive areas. Official figures on C-130 production are not available but *trade papers* (AMERICAN AVIATION, June 21) have reported that there have been two production contracts, an initial one for seven aircraft and a follow-up order for 20. These are in addition to the two prototype aircraft being built in Burbank.

While initial design of the aircraft

took place in Burbank, Lockheed-Marietta has a sizable engineering staff, about 600, under the direction of chief engineer R. W. Middlewood. As of now this is primarily a production engineering task but Gross has previously stated that he expects this division to design and build its own aircraft. Haughton, who reports to Courtland Gross in the parent corporation, maintains silence on this point. Under Middlewood are Norman Keller as project engineer on all B-47 work and Al Brown handling the C-130 project.

Other key figures in the administrative side include A. C. Kotchian, director of administrative and financial

operations, W. G. Myers, military sales manager, J. P. Lydon, director of industrial relations, and R. R. Haverstick, master scheduling manager.

This is the team Lockheed Aircraft Corp. has running its Georgia Div. Present backlog will carry them into 1957. By then more realistic information on the future scope of C-130 production should be on hand, the IRAN project should be taking on a fixed pattern, and the future should be more apparent. There are strong hopes that among other pending developments Marietta may be used for third-source B-52 production or possibly for jet tanker production if Lockheed proves successful in that competition. • • •

News Briefs

AIRLINES

Sale of Pioneer Air Lines' nine Martin 2-0-2's will be handled by William C. Wold Associates . . . **Eastern Air Lines'** revenue accounting department has moved from New York and Washington to Miami . . . **Congress** has been asked for laws on standards of physical fitness for pilots by the Airline Medical Examiners Association.

Philippine Air Lines has purchased two Hiller 12-B helicopters for passenger service and charter work. Carrier already owns two . . . **An airlift** operated by Pan American and Riddle Airlines began supplying Puerto Rico with all imports, mainly food and raw materials, after dock workers went out on strike on June 27 . . . **Resort Airlines** has been awarded a \$1.4 million contract by the Navy to fly five transcontinental round-trip flights weekly . . . Subsequently, seven surplus C-46's were leased to Resort by the USAF at standard \$1500 a month on orders of Air Secretary Talbott, in spite of an AF policy to the contrary. The Aircoach Transport Association has queried USAF on the action . . . **Transocean Air Lines** is now under contract to maintain all MATS planes stopping at Wake Island on flights between Honolulu and the Orient.

MANUFACTURING

Hiller Hornet ramjet helicopter has begun CAA-type certification flight tests at Santa Clara, Calif. Five are being built under a Navy-Army order . . . **Shipment of Convair's VTO fighter, XFV-1,** by water from Moffett NAS to Brown Field near San Diego for free-flight testing was scheduled for late July.

Aviation ranked fourth in industrial safety during 1953, according to National Safety Council, with 3.58 disabling injuries per million man-hours. Average for all industries was 7.44 . . . **Aeroproducts** propellers on the Allison (Convair 240) Turboliner have now accumulated over 500 hours . . . **Fifty-one** civil aircraft weighing 6000 pounds and under were exported during June, reports AIA. During first half year of 1954, 287 units were shipped.

Contract for production of 1800 tons of titanium sponge a year has been signed by the General Services Administration with Dow Chemical Co. Metal will be held for government use or resold to industry . . . **Lockheed F-104** project has been accorded division status . . . **Convair** plans to hire more than 1000 engineers and technicians during coming year. About 400 will be assigned to long-range electronics programs.

AMERICAN AVIATION

National AIRCRAFT SHOW

★ SEPT. 4-5-6 DAYTON

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The 1954 National Aircraft Show approaches its opening with the distinction of being larger and more outstanding than any of its predecessors.

Again, it has been accorded nationwide acceptance by the aviation industry.

Many new exhibitors and virtually all who exhibited last year have already reserved space.

To date, space reservations for exhibits exceed the total space taken in 1953.

To exhibit is to share the prestige and goodwill such participation offers and enjoys.

You should be identified with this major project—Aviation's Premier Aviation Show. To make sure—write or wire your space requirements NOW while assignments are still being made.

NATIONAL AIRCRAFT SHOW, Benjamin T. Franklin,
General Mgr., 214 N. MAIN STREET, DAYTON 2, OHIO

SACTIONED BY THE NATIONAL AERONAUTIC ASSOCIATION HELD UNDER RULES OF THE F. A. I.



YH-16 in position for ground resonance test. Note restraining cables attached.

PIASECKI'S NEW GROUND TEST

THIRTEEN CONSECUTIVE days of testing by new system has put the world's largest helicopter transport, Piasecki's YH-16 "Transporter," through its ground endurance trials at Philadelphia.

Dispensing with the rigid tie-down arrangements previously used, Piasecki took the risk of allowing the big rotorcraft to rise and move slightly as the controls were operated, thus subjecting it to more violent loads. Boxes weighing 20,000 pounds each were attached by cables to the main landing gear on each side, 16,000 pounds more was attached to the tail wheel, and 50,000 pounds of metal plates was laid on the

floor of the fuselage—a total load of 106,000 pounds. In spite of the weight, more than three times its normal gross, the YH-16 lifted into the air from time to time.

The tests indicated that the Transporter is free from ground resonance, a type of vibration which can damage a helicopter while it is on the ground.

To check any such resonance in case it should appear, Piasecki attached restraining cables to supports just beneath each rotor, then ran them to a power-driven winch. As a stand-by source of power in case the winch failed, a crew of men was kept ready to pull on bars attached to the cables. Neither winch nor stand-by crew was needed.

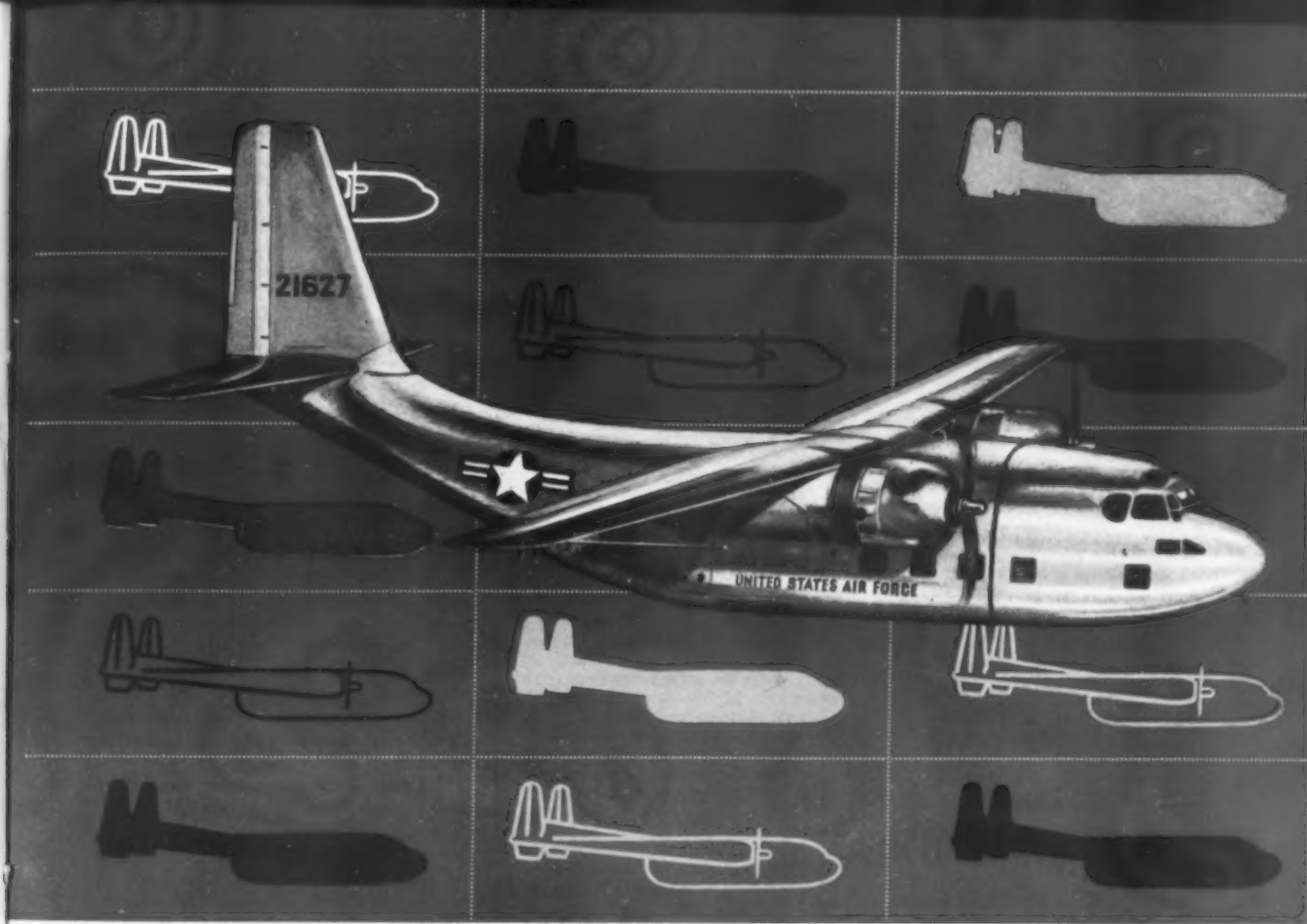
Winch operator is set to pull cables taut; men are ready if winch should fail.



For simulated flight tests, steel wheels are needed to support the added weight.



AMERICAN AVIATION



FLYING BOXCAR AND AVITRUC TEAMED FOR MILITARY AIR TRANSPORTATION!

Close to full-scale production at Fairchild — the new C-123 Assault Transport will fill specialized military requirements for an air transport sufficiently versatile to deliver men or equipment at advanced bases. This sturdy craft readily converts from a carrier of 60 fully equipped combat troops to a cargo plane delivering more than 15 tons of equipment.

Continuing quantity production of the combat proven C-119 Flying Boxcar assures the nation that

our military transport program is completely flexible. This dual production brings closer the day when C-119's and C-123's will be in regular use as a part of the U. S. Air Force and U. S. Army military operations.



American Helicopter Division, Manhattan Beach, Calif.
Engine Division, Farmingdale, N. Y. • Guided Missile Division, Wyandanch, N. Y.
Speed Control Division, Wickliffe, Ohio • Stinson Division, Bay Shore, N. Y.

coming in for considerable pressure.

The Cedarhurst Case in Queens has been carried over until the fall term. Whatever decisive action is taken by the industry now to alleviate noise, educate the public, and combat adverse propaganda can have a strong bearing on the outcome of the trial.

The use of preferential runways at Newark was only half successful. Adm. Charles E. Rosendahl, executive director of NATCC, reported recently that because of adverse winds and bad weather the flight diversion program had fallen short of its goal. It was impossible to divert more than half the Newark flights over isolated areas. Other measures were taken (acceleration to 1200-foot altitude as quickly as possible, retention of altitude as long as possible before landing, removal of all possible training flights, and avoidance of flights over Elizabeth and sections of Newark), but noise complaints continue.

Organized groups in the area are talking about legislation to ban flights between 11 p.m. and 7 a.m. Anti-aviation groups appear to be gaining strength and might have a good chance for curtailment plans if a strong, national, industry-wide public relations program is not put into operation before the hysteria peak is reached.

The Air Force, and especially the Air National Guard, is the cause of considerable disturbances with jets. In more than one instance ANG pilots, who usually fly on week-ends, refused to use good airports a few miles away and insisted on remaining at airports close to cities. The Air Force itself is continuing many close-in operations when they could quite easily move farther away. Much community criticism is being voiced at jet week-end training flights. Yet it is the airline and non-carrier civil operations at municipal airports which suffer.

At industry meetings it is usually admitted that airlines and CAA haven't done all they can to eliminate the noise nuisance. Sometimes a minor traffic rerouting solves the problem. Such a move not long ago ended complaints in Alexandria, Va., on the approach to Washington National.

On the manufacturing side, despite an over-all, shrug-of-the-shoulder attitude that airplane noise is here to stay, evidence is ample that much can be done to decrease the external noise level. Since they haven't considered the problem to be theirs, the manufacturers as a whole have done little to improve the situation. The "real noise" is yet to come. The F-100 series of airplanes is one example. Four-engine jet transports are another.

The U. S. industry is not actually inactive, but slow. Evidently the full import of the situation has not yet penetrated on a national basis.

Some weeks ago William Raymond, assistant to the president of Eastern Air Lines, called a luncheon meeting in Washington of representatives of almost all aviation organizations to discuss the problem and to hear what happened at Louisville. At that time, the Louisville and Jefferson County Air Board described an extensive aviation education program which it is now conducting and offering to other communities.

The net result of the session, how-

BRITISH ATTACK NOISE PROBLEM

The British are doing something decisive about the noise problem. The British government is spending about \$350,000 in research on aircraft noise reduction during the current fiscal year. This supplements research work being carried on by universities and aircraft manufacturers on their own initiative:

A leading engine manufacturer, under contract to the Ministry of Supply, is experimenting with noise reduction methods. Included is a detailed analysis of jet engine noise with various types of nozzles on an open-air test bed. A special study of the bypass engine is being carried out to determine relationship between noise, jet velocity, and temperature.

Two other engine companies are working on the development of silencers for piston engines used in helicopters.

Ministry of Transport and Civil Aviation is experimenting with construction of a brick baffle wall at London Airport.

Ministry of Supply has placed a contract for design of two types of mobile ground mufflers, one for single-engine and one for multi-engine aircraft. The single-engine type is expected to be ready for testing within a few months.

ever, was to demonstrate that aviation as a whole is unorganized to meet the increasingly sharp campaigns in various cities and to counteract the vicious propaganda inspired by the railroads against the airlines and other competitors. The 30 industry representatives attending did agree that the noise problem (1) is certain to get worse before it gets better, (2) must be met by the industry with a positive program of community and public relations rather than a defensive program, and (3) might best be attacked through an industry-financed organization that will do for all communities with high-traffic airports the job NATCC is doing in the metropolitan New York area.

Actually, the elements of a strong nation-wide public relations organization are already present and, with definite coordination, a strong educa-

tion program could be launched. It would require expansion of NATCC along with the merging of other groups:

- The National Aviation Noise Reduction Committee, in existence for several years, came forth with a new spurt of activity. At a meeting recently, authorization was given to form a special subcommittee to obtain more concrete measurements of noise levels at a number of specific airport locations. The group is headed by CAA Administrator Fred B. Lee, with A. J. Forte, executive assistant, as executive secretary. It is a top-level action group made up of executives representing all segments of the industry. Subcommittees include: operational aspects, aircraft/engine powerplant design and research, and public information.

- An Air Force commission of general officers, with Maj. Gen. Herbert B. Thatcher, HQ USAF, as head, has been charged with study of base location problems and the investigation of AF jet operations and the air base program. The 12-man commission was appointed because of civilian protest over jet operations at major bases and, specifically, because of the Louisville situation.

Other situations besides New York and Louisville require immediate attention and action: Negotiations in Washington for use of Andrews AFB as a secondary airport have been undermined by two factions. It is well-known, though not publicly admitted, that the Maryland-Friendship Airport lobby and the Air Force have used the noise "gimmick" to stir up residents to oppose civil traffic at the base. Jet crashes in the San Fernando Valley area frightened citizens into screaming for the closing of airports. (This situation has been quieted by \$1 million investment in runway overruns).

A situation in the highly congested Wichita area was forestalled by an accelerated education and public relations program. Quick action on related complaints—aviation's joint effort to do something—calmed the citizens to acceptance.

In forming an industry-wide program, it might be well to study methods used by Chicago aviation officials. Statistics prove that it is the highest traffic-density area in the U.S., with the lowest community complaint trouble. Chicagoans, obviously, have realized aviation's value—hence education and freedom from fear of the air seem to mentally lower the decibel count.

The tools are at hand, the organization must be constructed. The problem affects the manufacturer, airport operator, user, and military. The financing should reflect this. • • •



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The increasingly critical problem of military demands upon commercial airports recently has

attracted official attention. The expense, delay and inefficiency of dependence upon over-crowded public facilities approaches serious proportions.

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Here's AOPA's Lightplane Safety Plan

Curriculum completed for life-saving instrument course; key pilots to get instructor ratings.

By LOIS C. PHILMUS

DEFINITE MEASURES are being taken by CAA and industry to prevent pilots from going beyond their own limitations while operating the fast, clean lightplanes. Since announcement of plans for a wide-spread education program (AMERICAN AVIATION, Oct. 12, 1953), several specific measures have been taken. In that 10-month period the number of structural failures and other weather accidents has decreased only slightly, if at all. But the accelerated program should start showing results within the year.

Probably the most important contribution in the preventive program is the completion of the curriculum for Aircraft Owners and Pilots Association's 180° Turn Rating. AOPA commissioned the University of Illinois to plot out a life-saving instrument course sufficient to get a pilot out of weather. Government and industry officials have had checkouts at the university and are enthusiastic about the program. The curriculum is being put into book form, to be printed by AOPA and the university. It should be available within 60 days. When printing is completed, Max Karant, assistant manager of AOPA, and Ken Aldrich, CAA's general operations safety branch head, will personally call on the three major lightplane manufacturers asking cooperation through their distributors.

It will be requested that each distributor send a key pilot to the university to be put through the course. The pilot will then be responsible for training other instructors in his district. Instructors qualified to teach the instrument procedures will be so certified by AOPA. CAA will cooperate by hav-

ing its agents to do check rides in the "rating," also.

The 180° rating was worked out in a Beech Bonanza but the procedures are easily adapted to the other clean planes. It is based on four basic instruments—*altimeter, turn and bank indicator, magnetic compass and airspeed indicator*—for reference. The ball of the turn and bank is not used, just the needle. The course involves six lessons on an average, with about four hours of actual flight time. When a pilot completes the course, he will receive a certificate from AOPA and a permanent check list to be displayed prominently on the plane's instrument panel. The check list (see box) sets

AOPA'S 180° TURN RATING

Check List for Beech Bonanza

1. Hands off controls and in your lap. Center needle on turn/bank indicator with rudder.
2. Lower landing gear while at cruising speed. Center needle.
3. Throttle back to "idle." Center needle.
4. Trim to predetermined point marked on trim control; put prop in high rpm. Center needle.
5. Add power to predetermined point necessary for maintaining altitude (17 in. of manifold pressure on Bonanza). Center needle.

The above five steps are to be included on the check list sent to pilots by AOPA following pilot's completion of the "life saving rating" to get out of weather quickly and safely. Basic instruments: needle (only) of turn and bank indicator; altimeter; magnetic compass; airspeed indicator.

forth the five basic steps to be taken when the pilot finds himself without visual reference. The five steps are to be taken immediately on encountering marginal or IFR conditions. When accomplished, the aircraft is no longer in danger.

In step two—lowering the gear at cruising speed—Beech has stated that it is safe to drop gear while at about 150 mph, although the plane is placarded at 100 mph for that maneuver. In steps four and five of the check list, the predetermined settings are worked out by the pilot for his particular aircraft. He is to mark his trim control

and throttle *before* he gets into trouble. This is easily done, Karant states, by one or two check rides on a clear day.

AOPA hopes that it will be able to distribute the curriculum to its members at no cost, but if charge is necessary it will be a minimum.

CAA has divided its education program into two sections. One area, E. W. Hudlow, chief of the general safety division, states is aimed at the new pilot and another program is aimed at the pilot already licensed. The program has been adapted to the new use of the lightplane: business flying from coast-to-coast.

To properly indoctrinate the new pilot to today's flying ways, CAA has:

- Revised CAM 20, to prescribe more detailed maneuvers;
- Strengthened control over instructor in new Part 51 and creating a new instructor rating;
- Revamped accident analysis by charging an accident back to the instructor in a new pilot's first year of flying. This way, corrective action is taken in the type of instruction given.

In addition, CAA has improved its accident analysis procedure. Recently, two agents from each region were in Washington for a two-week course in reporting procedures. Now, in their respective regions they are responsible for indoctrinating district representatives. In major accidents of the structural-failure, exceeding-limitations type, the Washington-trained agent is called in by the district. When he finds that a pattern is being set by certain structural failures, perhaps three or more, he notifies the district representative, who in turn calls on the aircraft manufacturer. To supplement this, monthly inspection aids are sent to CAA maintenance designees. When a pattern of failure seems to be forming, alert bulletins are mailed immediately.

CAA has also improved pilot exams, i.e., on VOR and weather recognition. The commercial rating exam has been completely reworked to be more practical. The exam now requires that specific courses—previously flown by CAA officials—be plotted and flown. Hudlow states that these steps better qualify pilots to begin with, gearing all instruction, regulations, and inspections to the use of the aircraft.

There currently is a proposal in the airworthiness review agenda which would require aircraft *ineligible* for instrument flight to be so placarded. The aim, Hudlow says, is to encourage aircraft owners to have instruments installed according to manufacturers specifications. There is danger, he points out, that lag between maneuver and instrument results from non-specified installations.

LOOK for the
Announcement
with the STAR
and ARROW
on page 61
IF YOU-



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Airlines Again Ask CAB for Authority To Discuss Financial Problem

By WILLIAM V. HENZEY

ALARMED at "sidetrack" arguments which refuse to focus on deteriorating net revenues, the nation's scheduled airlines have again asked the Civil Aeronautics Board to authorize discussions (not fare increases) to determine how best to bolster their revenue position.

The question at this time, according to Air Transport Association president Earl D. Johnson, is not whether CAB should approve an increase in basic fare levels, but whether CAB should authorize airline management to sit down and discuss jointly the best means of coping with the problem of decreasing revenues.

In May, Johnson went before the Board personally, on behalf of the industry, to show that a problem existed, that it gave every sign of getting worse, and that obviously something had to be done. Under new CAB procedure, it was necessary for him to get Board approval for the industry people to sit down together to discuss the situation. Otherwise they would run the risk of conducting such talks without anti-trust immunity.

The CAB, in what ATA now contends was an off-focus ruling, refused the permission sought because, among other reasons, there was not a convincing showing "that rate or fare changes are needed at this time."

Said Johnson in his petition for reconsideration to the Board, "the industry never attempted to make such a showing! It was not requesting approval of a particular solution to the problem; it was seeking permission to hold joint discussions to try to work out a solution."

That A. T. A. and its airline members were in a frustrated position was also evidenced by misinterpretation of the airlines' position in some elements of the press. In one case, the CAB action and a subsequent address by an ATA official indicating the airlines would exert every effort

to develop new traffic, were coupled to indicate that the industry had finally realized the "solution" was more low-fare coach service.

Doubtless, few industry officials will disagree with the theory that more coach service will produce increasing numbers of passengers. But this is another "sidetrack" argument, for ATA's proposal to CAB is not an "anti-coach" proposal, but is purely and simply a request for the government to let those that know more about operating the airline business than anyone else—airline managing officials—sit down and see how best to prevent further narrowing of the profit margin.

For example, the average operating ratio of the airlines since 1946 has been 93%, or, stated another way, 53¢ was spent for every \$1 of traffic produced. Estimates for 1954 indicate that 96¢ will be spent for each revenue dollar. For comparison purposes, the inter-city bus lines, which have many of the characteristics of the airlines, received \$1 revenue for every 86.6¢ spent on the average since 1946.

It would, airline officials argue, be "blind management" to ignore such a trend on the isolated theory that all that's needed is more coach service.

Short haul problems

On this point, Johnson's assistant at ATA, Stanley Gewirtz, presents an emphatic argument. Even if the airlines were to capture all of the common carrier market over 1000 miles, Gewirtz states, they would still add only 2 million additional passengers. This would constitute little addition to their total net income.

In the short-haul market of under 500 miles, where the airlines attract only about 18 million of better than 500 million passengers, Gewirtz said that "if all of the airlines were successful in closing in on that market, they would still be confronted with the seemingly insurmountable obstacle of the cost of carrying a passenger less than 250 miles on existing equipment—where most of that market travels."

C. E. Woolman, president of Delta-C&S Airlines, recently told the Senate Commerce Committee that a DC-6 at a 60% load factor doesn't get to its break-even point until average trip length exceeds 500 miles. On a Convair operation at the rate of 5¢ per passenger seat-mile, that plane's break-even point is not reached except at trip lengths of over 225 miles.

There can be little doubt that industry's financial picture needs a thor-

ough reassessment. Recently, the investment Bankers Association of America said that "investor confidence in air transportation is at one of the lowest points that it has been since the Civil Aeronautics Act was passed in 1938." (AMERICAN AVIATION, July 19).

Thus, it is short-sighted to argue that the public interest requires and demands more lower fare services, while ignoring the facts of life of running the airlines as a business. Where will all the masses of potential passengers ride if the airlines are unable to finance the necessary new equipment to transport them?

Or how can the millions of American's residing in less-populous cities gain the benefits of low-fare service if airline profits are so low as to prevent expansion of coach service to the entire country and not just to the heavily-populated areas?

No talks, no solution

Coming back to the basic question now before CAB—whether joint talks should be authorized to discuss the financial picture—Johnson summed up the industry's position this way:

"How can the carriers make such showings as required by CAB, and why should they be expected to do so, when one of the principal purposes of the discussion is to determine whether a change in fare or rate levels will provide a solution to the problem facing the industry?"

"The tests which the Board lays down are an invitation to the carriers to hold their discussions before seeking permission to hold them, for in no other way can the carriers arrive at a decision as to the 'immediate need for basic changes in fare or rate structures or levels' which the Board says they must demonstrate before they will be permitted to discuss the subject."

"The industry, or any group of air carriers wishing to discuss a common problem, should not be required to show more than that the carriers have a common problem, and that joint discussions will aid its solution."

"Having authorized discussions under this standard, the Board reserves its regulatory power to pass upon the carrier's proposals. If in this case, as well as in similar cases in the future, this course of action is followed, the carriers and the Board will receive all the benefits of the carrier's experience, ingenuity, and factual knowledge of their industry, and the Board will have lost none of its authority to review the carriers' proposed action in the public interest." ● ● ●

**LOOK for the
Announcement
with the STAR
and ARROW
on page 61
IF YOU-**

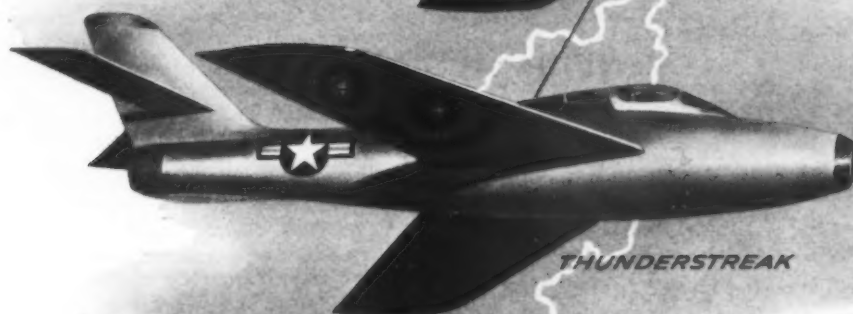


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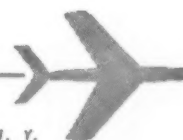
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REPUBLIC AVIATION



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Instrument-Approach Aids Installed

By JOSEPH S. MURPHY

FOR THE FIRST TIME since the U. S. Weather Bureau introduced its fixed-beam ceilometer almost 15 years ago, military and civil pilots can look to the coming winter season with anticipation of vastly improved airport ceiling and visibility forecasts to aid them in low-weather approaches.

Final details of a U. S. Weather Bureau program for installation of new weather measuring devices at major air terminals are now being worked out. Actual installations are already in process and, in fact, are already completed at New York's three major airports and at Washington National Airport. Over the next 18 months, similar facilities will be extended to more than a dozen other key cities.

The USWB project represents a two-pronged attack on the weather problem. For one, it applies the latest in technical know-how to get the most accurate readings of ceiling and visibility. Secondly, it locates the instruments in the runway approach zone where the pilot actually experiences the weather, not at some remote station or airport site convenient for the observation.

The whole project is built around two new weather instruments—a transmissometer and a rotating beam ceilometer now being produced by Crouse-Hinds Co. of Syracuse, N. Y. The former gages the runway visibility at about the height of the pilot's head when the airplane touches the runway. The ceilometer, as its name implies, measures cloud height or ceiling in the approach zone at about the middle marker location.

Groundwork for use of the devices

in forecasting "end of the runway" weather was laid down in a project conducted by the Air Navigation Development Board. Weather Bureau, and Sperry Gyroscope Co. over the past two years at MacArthur Airport, L. I.

Slated to get the new instruments are such airports as Chicago (Midway), Los Angeles, San Francisco, Seattle, Portland (Ore.), Detroit, Kansas City, Pittsburgh, Cleveland, Philadelphia, Boston, Fort Worth, and Anchorage. These have been chosen on the basis of exposure to instrument landings during year-around operations, and, according to 1953 CAA statistics, the 17 airports picked account for 40% of all instrument approaches.

Weather Bureau officials feel that if traffic growth estimates run true to current forecasts, eventually 53 airports will qualify for the new facilities.

And the program is by no means confined to civil airport installations. Both the Navy Bureau of Aeronautics and U. S. Air Force Air Weather Service have similar projects in the mill.

Although Crouse-Hinds has built all of the equipment produced to date, a recent Weather Bureau contract for transmissometers amounting to \$41,000 went to Precision Equipment & Parts Co., Baltimore, Md. Cost of the transmissometer is about \$2000 per unit, whereas the more complex rotating ceilometer is priced at about \$9000.

The transmissometer, a National Bureau of Standards invention, operates on the photoelectric cell principle and measures light transmission through the atmosphere over a predetermined

distance. Light of constant intensity is projected by a sealed reflector-type spot lamp of 6-volt, 120-watt capacity, and a lens and diaphragm in the detector provides a fine adjustment of the light received by the photoelectric cell. The light generates current within the cell which is discharged as a pulse through a detector amplifier, the frequency of the pulse being directly proportional to the amount of light received.

These pulses are then amplified and transmitted to a remote indicator in the weather station via a low-power industrial communication hook-up. At the receiving end, a two-stage amplifier, frequency measuring network, and calibration circuit combine to convert the signal into a meter reading that is directly proportional to the pulse frequency as well as to the transmissivity of the atmosphere between the light source and the receiver.

Credit for ceilometer development goes to Weather Bureau engineers L. W. Foskett and R. H. Guenther. Like the transmissometer, it consists of a projector and receiver spaced 400 feet apart in the approach zone of an instrument runway.

The ceilometer projector is made up of a rotating mirror assembly with two 24-inch parabolic mirrors mounted 180° apart. To insure that the transmitted light signal will be distinguished from ordinary daylight, a 4-vaned, cylindrical shutter, which encloses a 250-watt lamp, is mounted on the focus of each mirror. Each shutter turns at the rate of 1800 rpm, producing 120 light pulses per second.

The ceilometer detector or receiver is also equipped with a 24-inch mirror having a photoconductive cell at its focal point which picks up the modulated light beam reflected by the clouds overhead. A signal representing the angle of the projected beam is transmitted to the weather station again using low-power communication lines, where it is converted by triangulation to a measurement of cloud height.

Instead of the present tower observation every 12 or 15 minutes, pilots will have available a new ceiling measurement every six seconds. • • •

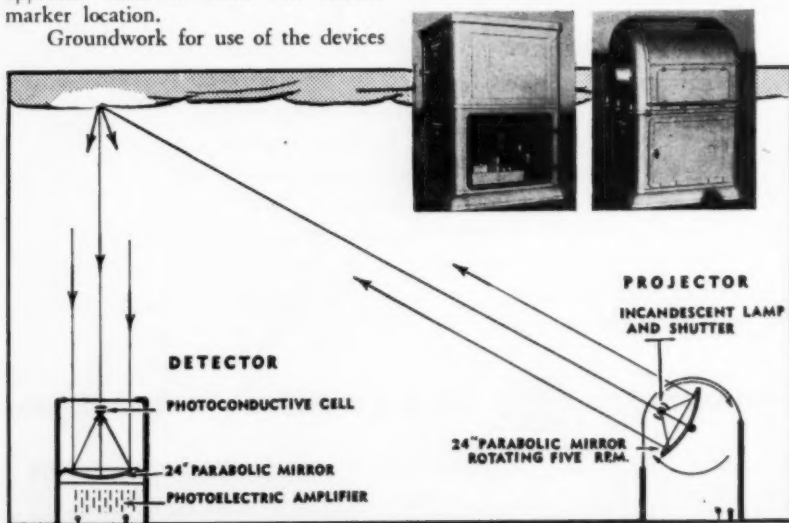


Diagram shows triangulation principle of ceilometer. Detector transmits signal to indicator (not shown) at weather station. Photos above show detector (left) and projector.

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and **ARROW**
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The Constellation project started in 1939, developed into a family of commercial and military aircraft. The Super Constellation now flies on 18 airlines throughout the world. Each month this year a new airline starts Super Constellation service. Military versions of the plane are in service with the U.S. Navy and U.S. Air Force as transports and radar search planes.

Production orders already extend into 1956. And in development: turbo-prop Super Constellations to continue Lockheed leadership in rapidly expanding passenger and cargo transport fields.

This means stability to a career-conscious engineer, whether you work on the Super Constellation or one of Lockheed's fighter, bomber, trainer, vertical riser or nuclear energy projects. (Example: when the F-94 project was completed, all Starfire engineers were assigned to the Super Constellation or one of the other projects. The Super Constellation family and Lockheed diversification made this possible.)

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to evaluate airplane and engine performance from flight test data. The position requires a degree in Mechanical or Aeronautical Engineering.

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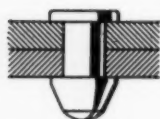


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West Coast Talk

By Fred S. Hunter



Comes now, you might say, a crucial period for Boeing's Model 707 jet tanker-transport. Financially, that is. It's the flight test phase of the Seattle manufacturer's bold attempt to beat the rest of the industry to the punch by coming out first with a turbine-powered replacement transport.

Cost of flight testing the four-jet 707 will be \$5,000 to \$6,000 per flight hour. Boeing already is on the books to the tune of \$15,000,000 for the prototype, so cost of the 50-hour flight test program which Boeing has scheduled initially would seem to be no cause for undue pain in the pocket-book. But the next step will embody 300 hours. Boeing's engineers have roughly sketched this one out, but, prudently, haven't yet asked the company's directors to budget the funds to pay the bill. They hope that by the time it is necessary to document Phase 2 of the flight test program fully, Boeing will have received the tangible encouragement they feel the company's pioneering eventually will receive from the military.

Most observers incline toward the opinion that the Air Force in time will buy the 707 in the tanker version, if not the transport. They think several reasons add up, such as the company's experience both in multiple jets and in tankers, something no other company now possesses. This viewpoint, of course, is predicated on the theory that the speed and altitude limitations of present-day, propeller-driven KB-29 and KC-97 tankers will make them uneconomical for aerial refueling of new-type high fliers like Boeing's B-52 or North American's F-100, thus compelling the Air Force to turn to turbine power. A possible discordant note in this line of reasoning might be sounded if the Air Force should decide to try a turboprop tanker first.

Don't overlook the Navy in evaluating the 707's military chances. It might very well decide a jet transport could be a fleet logistics asset. If you listen closely, you may even hear hints the Navy is showing more interest in the Boeing venture right now than the Air Force.

It's a foregone conclusion that Boeing is counting on growth in Pratt & Whitney's J57 engine. The engines installed in the prototype turn out approximately 10,000-pounds thrust. It's reasonable to assume this can grow to 12,000 pounds.

Another phase of the commercial side of the Boeing gamble is represented by the security restrictions on the J57 engine. This powers the nation's latest jets, such as the Boeing B-52, Convair F-102, Douglas A3D and F4D, and North American F-100. For this reason the engine's release for export could be delayed, which might cost Boeing some of its time advantage on a commercial version.

Military version of the 707 will be tagged 717. . . . A noteworthy feature of the tanker-transport is that it has no structural bulkheads in the long length of fuselage. . . . Only two layers of soundproofing have been installed in the prototype for the present. . . . The prototype was put together at the Renton plant, which is an Air Force facility, and rent paid to Uncle Sam is one of the cost items charged against the plane. . . . CAA-type certificate for the Boeing jet transport will await a production plane since the prototype is not—to coin a word—"certificateable." . . . Boeing's employment now totals 65,500, bringing it close to Douglas' which, as of a recent date, totaled 69,365.

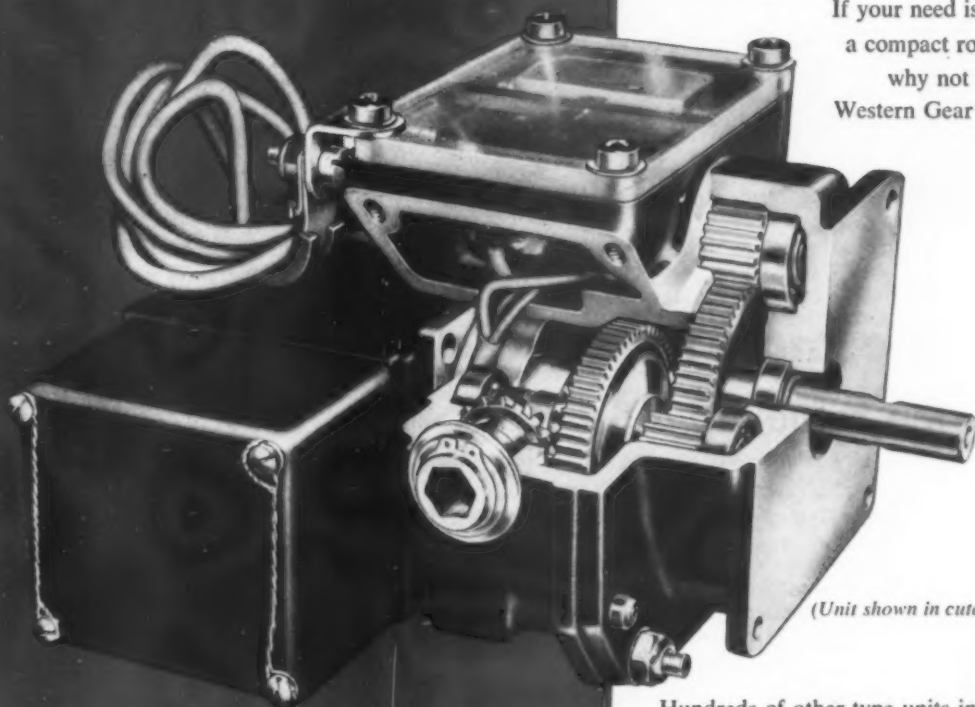
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The Big Untapped Tourist Market

23-day low-cost trans-Atlantic excursions would add passengers in off-seasons and in off-peak directions.

HOW TO TAP a broad new market of potential trans-Atlantic vacation travelers and at the same time help to level out the peaks and valleys in loads carried by the airlines is embodied in a plan proposed by Scandinavian Airlines System and which will come up for International Air Transport Association action next month.

The SAS proposal: A year-round 23-day round-trip excursion fare at 120% of the present one-way tourist fare.

The purpose is to make it possible for the average American with two or three weeks' vacation to visit Europe on a package tour for about \$500, including transportation, lodging, meals, sight-seeing, etc. New York-London round-trip fare, for example, would be \$348, compared with one-way tourist tariff of \$290. New York-Paris would be \$372.

SAS is supported by a large majority of travel agents sounded out on the plan, which is currently under consideration by IATA's committee on fares, rates, charges, and services. Formal vote will be taken at the IATA traffic conference sessions in Venice in September. Of 511 agents answering an SAS questionnaire, 474 voted for the proposal, 33 were against it but had alternate suggestions, and four said they did not understand the need for it.

SAS has stated emphatically that the tourist fares established two years ago have not tapped the market they were intended to reach—the 65 million people in the U. S. who work on a salaried basis and who have two or three weeks' vacation. This is proved by the fact that the greater part of the tourist passengers spend upwards of 40

days in Europe and they are persons who are self-employed, operators of small businesses, older people, farmers, etc., whose time is their own to allocate more or less as they see fit, the airline said.

The 23-day fare, it added, would offer two advantages to the airlines:

- The new market to be reached will consist of people whose travel habits are not nearly as fixed as those of present tourist passengers. They can be sold on off-season vacations, giving the carriers a traffic boost when they need it most.

- Of equal importance, the 23-day limit would help solve one of the airlines' most troublesome summer problems—the big difference in loads between peak and off-peak directions. SAS has contended that tourist fares, while lifting total traffic to a higher level, did not help narrow the gap between capacity and number of seats sold in the off-peak direction.

For example, in the peak month of June, 1953 (see table), there were 2750 unsold seats eastbound, or 10.1% of total. In the same month, in the off-peak westbound direction, there were 12,347 empty seats, 46.6% of total. The imbalance shifted in August, with 1957 empties westbound (6.4%) and 14,014 eastbound (47.5%). It was worse in September.

The excursion fare would help to equalize loads because a passenger going to Europe in June, for example, would have to return in the same month or in early July, when plenty of westbound seats are available.

In other words, carriers could use the 23-day vacationers as "top-off" traffic in the peak direction and help their off-peak load factors considerably, an

SAS official explained. He warned that placing limitations on the excursions—restricting them to winter months—would defeat this purpose.

The new market would have the additional advantage of being "exclusive" for the airlines—a 23-day vacationer does not have time to go via steamship. However, SAS said, strong merchandising methods will be needed to make the plan successful because airlines for the first time will be in competition "with all the other vacation lures dangled in front of the nose of the American vacationer. It will mean that the carriers will be competitive to a large extent even with automobile trips which today constitute the major portion of vacation traffic in the U. S. market."

While admitting that the new fare would divert some traffic from present tourist class, SAS added that such diversion would be much more than offset by the new business that would be created. Also, with most tourist passengers staying in Europe upwards of 40 days, it is unlikely that many would cut their visits in half merely to take advantage of the fare.

European tourist class passengers appear to stay in America at least as long as American passengers stay in Europe, "and the composition of the tourist travelers indicates that the very limited validity of the proposed fare should effectively prohibit diversion to any great extent. On the other hand, certain new traffic may be developed from Europe, i.e., small businessmen who only at the proposed fare may find it profitable and possible to go to the U. S."

In further support of its proposal, SAS pointed out that legislation has been introduced in Congress for creation of a U. S. Travel Commission to encourage Americans to travel abroad. Proponents of the legislation have recognized the "need for a total price within reach of the average man. They are thinking of the average man on a salary who can travel during his vacation. They have, interestingly enough, picked on the sum of \$500 as being the appropriate price."

SPACE AVAILABLE—NORTH ATLANTIC ROUTES

Unsold Seats					% of capacity			
	1950	1951	1952*	1953*	1950	1951	1952*	1953*
Westbound								
April	5924	5888	5556	7492	33.6	33.1	32.0	49.0
May	9876	7157	3704	13328	46.5	33.5	34.8	54.1
June	13619	9024	7267	12347	51.7	36.4	42.5	46.6
July	10542	10211	6484	7151	38.3	39.2	32.7	27.5
August	3459	5613	710	1957	12.3	20.9	3.4	6.4
Sept.	2361	2304	553	854	8.3	8.5	2.6	2.8
Eastbound								
April	6917	7465	4874	4733	39.6	41.6	28.8	31.4
May	7682	7777	411	7324	36.1	36.1	3.5	28.4
June	4800	6036	497	2750	17.9	24.1	2.7	10.1
July	8125	7671	2488	4251	29.8	30.3	12.6	15.3
August	16579	14948	7960	14014	63.1	58.4	40.3	47.5
Sept.	13963	10591	9712	17667	51.2	40.5	52.5	62.1

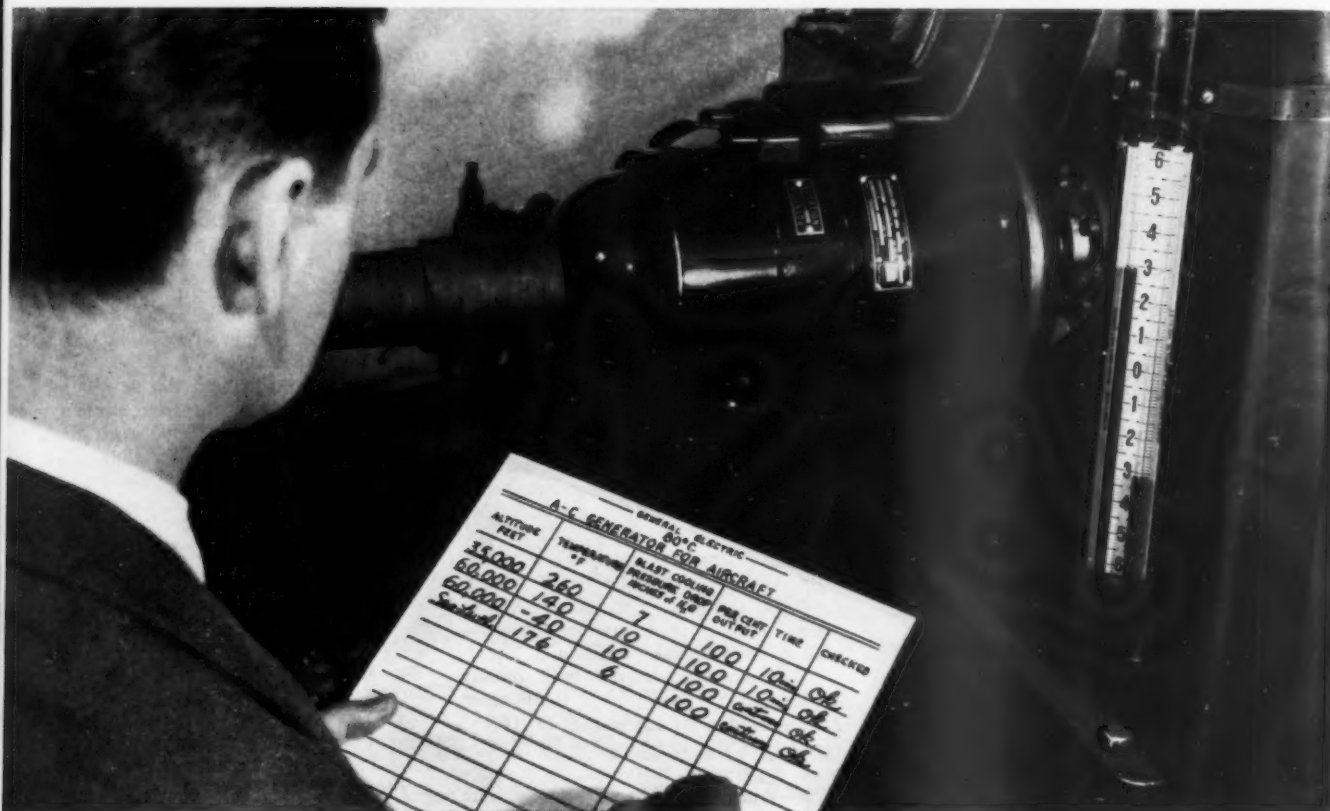
* Tourist Class from May 1952

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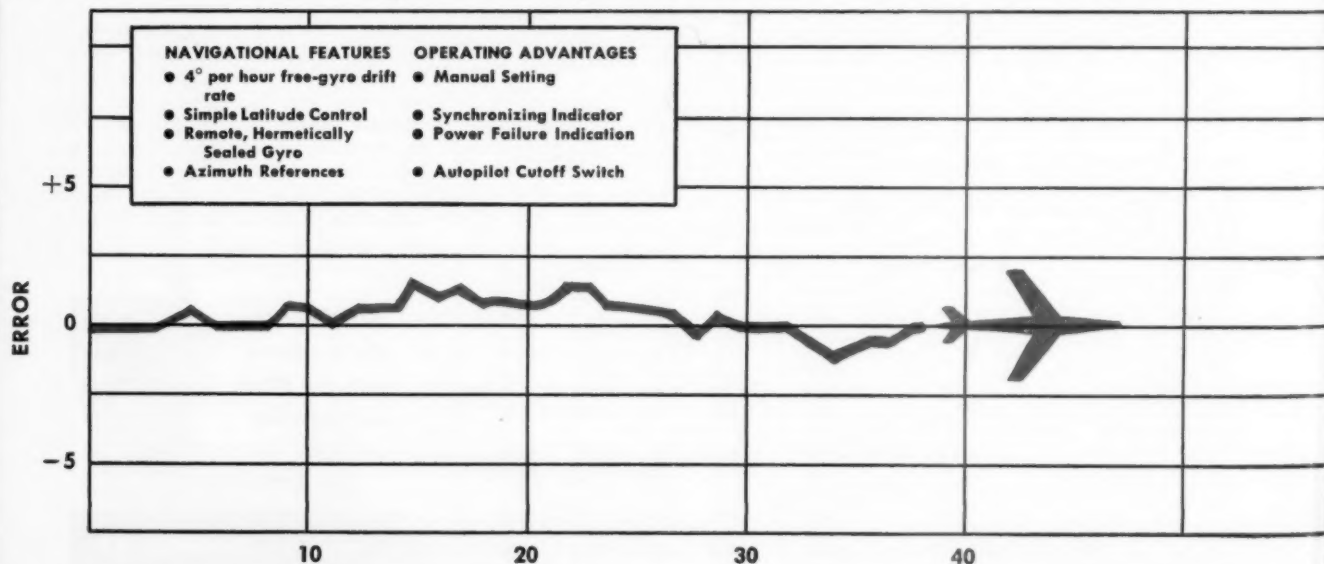
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New G-E high-efficiency a-c generator has no harmonic over 1%, and offers full load recovery in about 1/10 sec. Available ratings: 10 to 60 kva, 380/420 cycles, 5700/6400 rpm, 120/208 volts.

New G-E compass system reduces aircraft



Low drift of gyro system proved in laboratory and flight tests. The above drift curve was obtained during a roll-pitch-yaw test on a G-E gyro unit. This test, conducted by an outside equipment laboratory, showed that at no time did the drift rate exceed 4° per hour—66-80% reduction over previous systems. Flight test conducted later upheld the laboratory findings.

delivers load at 260F

A new, fully automatic parallel a-c electrical system which eliminates normal manual switching, and delivers rated load at higher ambient temperatures than ever before possible, has been developed for jet aircraft by General Electric.

Designed for supersonic dash

Designed specifically to meet the high ram-air temperatures of supersonic dash, this new G-E generator system provides the best voltage regulation and most advanced system protection available in production today. The automatic system delivers full load at:

- Sea level with 176 F cooling air at 6-inch water drop (continuous).
- 60,000 feet with -40 F cooling air at 10-inch water drop (continuous).
- 60,000 feet with 140 F cooling air at 10-inch water drop (ten minutes).
- 35,000 feet with 260 F cooling air at 7-inch water drop (ten minutes).

Speeds take-off, spares pilot

The first completely automatic a-c system ever produced, the new G-E equipment begins operating as soon as the pilot starts an engine. The system contains only two toggle switches, which can remain "on" at all times unless a fault develops. This eliminates a series of pilot functions, and sharply reduces time required to become airborne after the pilot climbs into the cockpit. System control and protection is fully automatic.

Single source for complete systems

General Electric offers a single source for complete a-c or d-c power generation systems for any aircraft. For more information, contact your nearest G-E aviation specialist, or write Section 210-86, General Electric Company, Schenectady 5, N. Y.

drift rate 66 — 80%

A new compass-controlled directional gyro system which offers a free-gyro drift rate of only 4° per hour—66 to 80 per cent more efficient than present systems—has been developed by General Electric for helicopters and fighter aircraft.

Weights only 17.5 lbs.

Compact and lightweight (approximately 17.5 lbs.), the MA-1 compass system is designed to meet the requirements of any synchronous course-indicator, and will operate from all compass transmitters built to Air Force specification AF-27635.

Accurate, stabilized heading information

The MA-1 system offers accurate, stabilized heading information continuously through 360° in azimuth when slaved to the earth's magnetic field through a modern remotely mounted compass.

Featuring a normal slaving rate of approximately 2° per minute during compass-controlled operation, the MA-1 system also provides for controlled latitude-drift compensation.

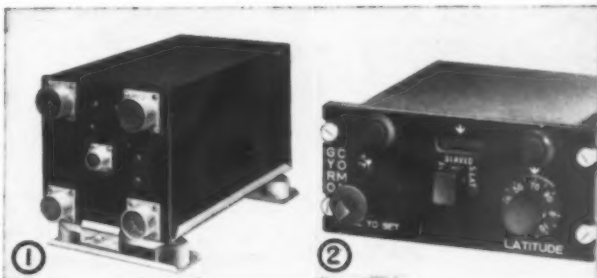
Aircraft systems development

For additional information regarding reliable aircraft systems development, contact your G-E aviation specialist or write Section 210-86A, General Electric Co., Schenectady 5, N. Y.



Major components of the new G-E system in addition to the generator are:

1. New static regulator (left)—designed to last the life of the aircraft though regulator is only 390 cubic inches and weighs only 13 lbs.
2. Control and protective equipment (right) automatically locates and isolates any faulty generator. Control panel weighs only 8½ lbs. for a single-generator system and only 10¼ lbs. for parallel generator systems.



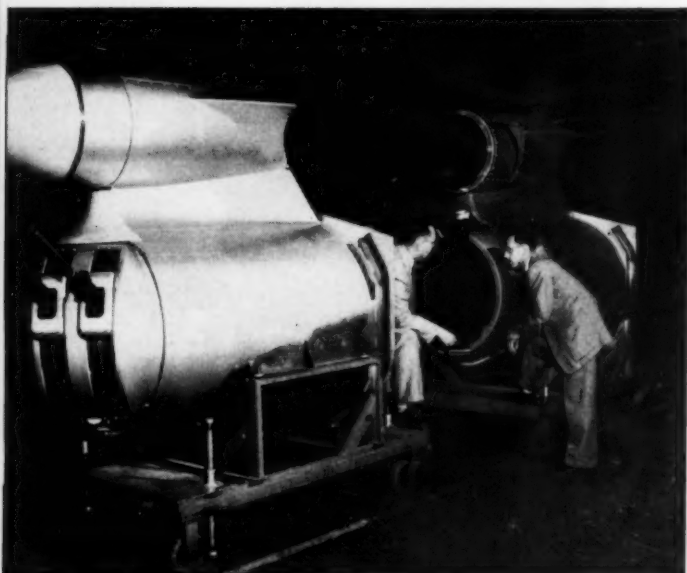
1. Amplifier provides a junction box for various components and power source as well as containing leveling, slaving and servo amplifiers, servo unit with detector, follow-up and output synchros.
2. Controller is used in conjunction with the radio-magnetic indicator for setting directional heading and latitude control and for general operation of the system.
3. Directional gyro, heart of the G-E system, is a remote, low-drift hermetically sealed gyro used to obtain a stabilized azimuth heading.



Progress Is Our Most Important Product

GENERAL  ELECTRIC

New G-E armament system gives jet bombers

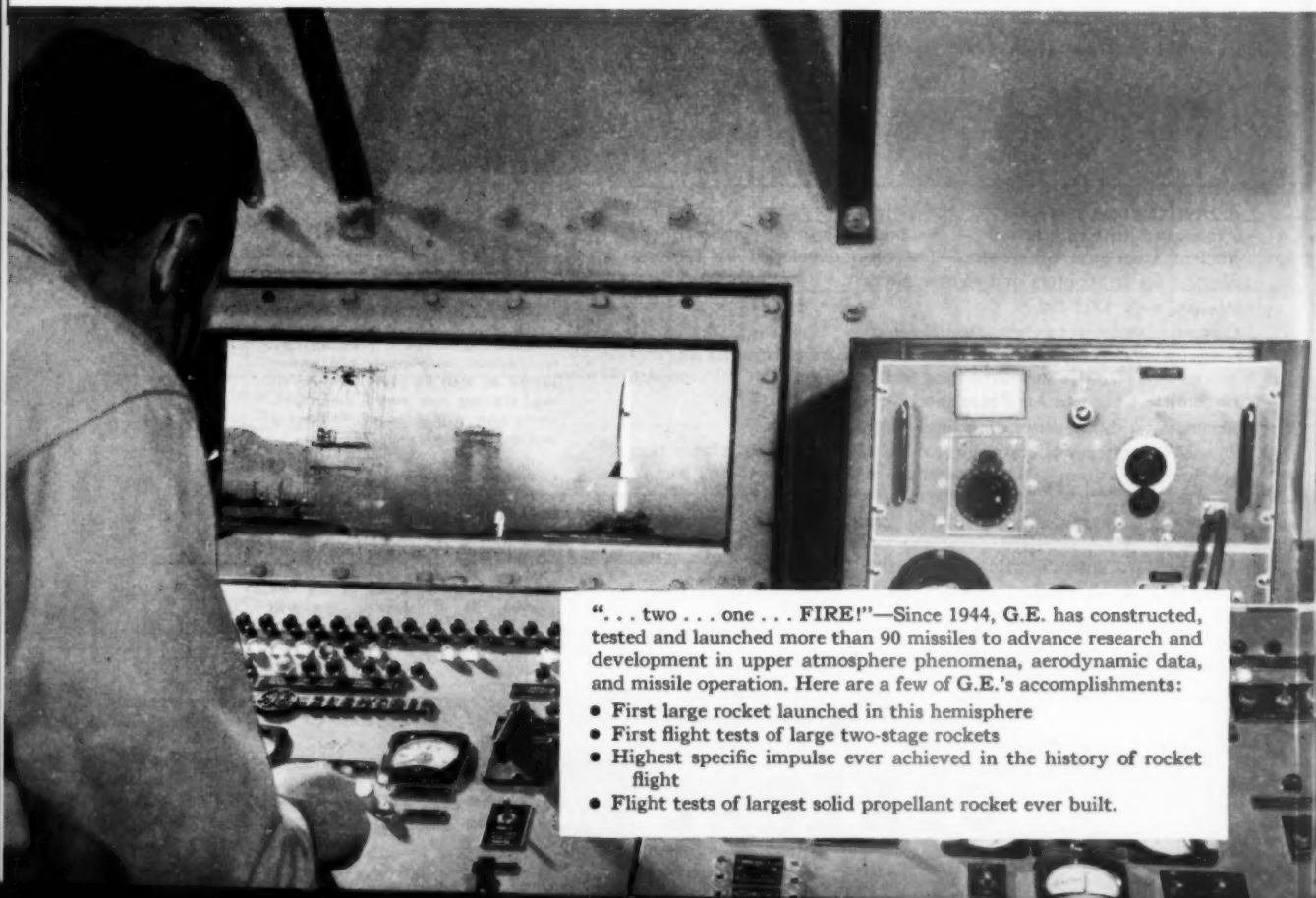


This new 20 mm system is a result of G.E.'s "integrated system" approach whereby a group of engineers is responsible both for development and modification of a system for greatest efficiency and ease of maintenance.



Cold and hot chambers with temperatures ranging from -90°F to 170°F are only two of the elaborate tests G-E armaments systems undergo to help insure maximum flight efficiency.

New land-sea-air uses for rocket propulsion



"... two ... one ... FIRE!"—Since 1944, G.E. has constructed, tested and launched more than 90 missiles to advance research and development in upper atmosphere phenomena, aerodynamic data, and missile operation. Here are a few of G.E.'s accomplishments:

- First large rocket launched in this hemisphere
- First flight tests of large two-stage rockets
- Highest specific impulse ever achieved in the history of rocket flight
- Flight tests of largest solid propellant rocket ever built.

automatic defense

A remote-controlled 20 mm armament system, capable of finding, tracking and hitting hostile aircraft even in the night or fog, has been developed by General Electric for high-speed jet bombers.

"Packaged" protection for B-47E and RB-47E

Under security wraps for three years, the G-E fire control system provides more reliable, automatic protection for the Boeing B-47E and RB-47E jet bombers. Compact, the 20 mm system is delivered packaged, tested, and ready to be installed as a complete tail section.

Automatic warning, tracking, correcting

The system performs the following functions:

- Provides automatic radar warning of approaching aircraft
- Automatically tracks and positions guns on selected target
- Continuously corrects for windage, ballistics, and lead errors by means of an electric computing network
- Fires guns electrically when target is in range.

System Engineering

Bomber survival is increased as a result of this integrated, effective, compact system. Competent system engineering is one reason why almost every U.S. operational heavy and medium bomber today is equipped with General Electric armament systems. General Electric Company, Schenectady 5, N. Y.



Remote-controlled G-E armament system gives the Boeing B-47E and RB-47E jet bombers a heavyweight punch to the rear. Guided by radar, the 20 mm system can track and hit unseen targets.

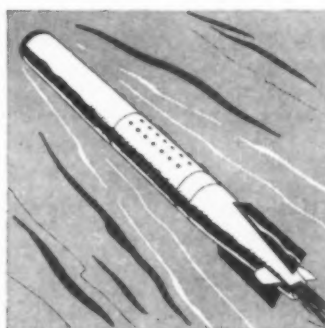
under study by G.E.

Ten years ago, rocket propulsion had but one use . . . to launch missiles. But today, rocket power as a source of high pressure, high speed, high temperature gases and power can be used in such applications as torpedo propulsion, catapult energizers, high-speed flight, thrust augmentation, rocket booster and sustaining power, high-speed research sleds, glider take-off and landing, supersonic wind tunnels, mining, plus many additional latent military and industrial uses which will be brought out by research and development.

Experience, manpower and facilities make it possible for G.E. to design and develop rocket motors or rocket propulsion systems for use on land, sea or in the air.

The amazing growth of rocket propulsion offers a challenge to the ingenuity and imagination of American industry. This challenge—to apply the tremendous power of rocket propulsion to ever-newer applications—can be met only through continuous research and development. To this end, General Electric offers its successful experience, its trained manpower, and its extensive facilities. General Electric Company, Schenectady 5, N. Y.

210-868



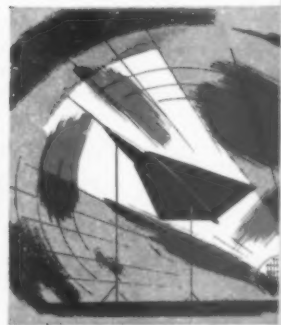
TORPEDO PROPULSION



THRUST AUGMENTATION



MINING



SUPERSONIC WIND TUNNEL

Progress Is Our Most Important Product

GENERAL  ELECTRIC

Segregated Fuel Storage Can Be Cheaper

And both producer and consumer like it better; here's how the Petroleum Institute would do it.

By WALTER A. KILRAIN

SEPARATE FUEL storage tanks for each oil company delivering to an airport may cost less than systems in which the products of all companies are mixed.

The American Petroleum Institute studied the two approaches to airport fuel handling and charged the commingling systems with three main drawbacks:

- An airline is prevented from receiving fuel from a company of its choice;

- The airport may be put out of commission at one stroke in case of fire or explosion in the single bulk storage area;

- An oil company is deprived of incentive to improve its products, since the customer is not able to identify it with the improvement.

To check comparative costs, API designed a segregated system and a commingling one for the same hypothetical airport, and had installation expense estimated by engineers from three oil companies, working independently. Winner: the segregated system, running 94%, 95.4%, and 96% of the cost of the comparable commingling proposal.

The segregated system for which these results were obtained is designed to serve a 16-gate major airport with a total of 12 25,000-gallon tanks (see drawing). The tanks are divided into four groups so that from one to four oil companies can be accommodated. API says this is the maximum number of suppliers serving any U. S. airport at present. Gates are connected by three six-inch-diameter mains, and any combination of gate positions can be served by any of the suppliers.

Tank trucks bring in the fuel along the edge of the concrete apron to the proper storage area where they

pull off onto a small paved parking space during unloading. The trucks are low enough to be cleared by the wingtips of transport planes.

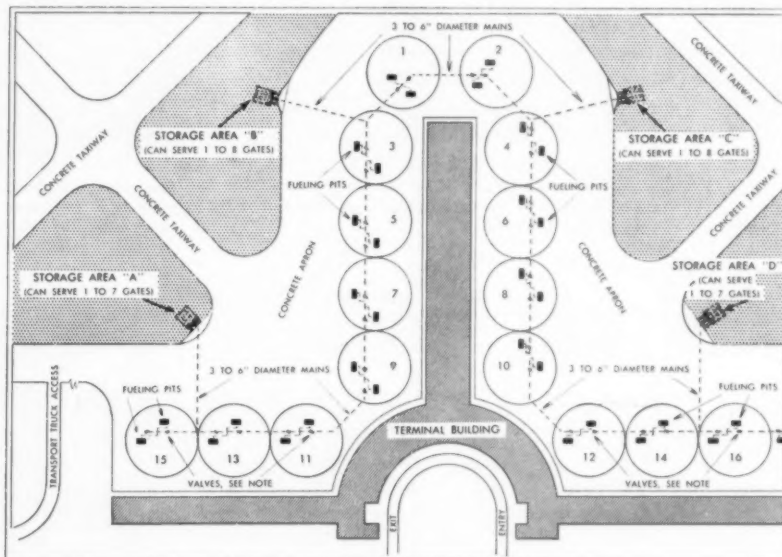
From these four groups of tanks fuel is piped to whichever gate positions that supplier is serving. One airline might be assigned gate positions 1 through 11 (see drawing). These would be supplied by fuel from storage area B. A second airline, with gates 13 and 15 assigned, would receive fuel from area A. The other side

system is described as cheaper than a commingling system.

The commingling system with which the basic segregated plan is compared is assumed to use one 10-inch and two eight-inch mains to connect all gate positions. Fuel lines run 4200 feet to the gate positions from a bulk storage area at one side of the terminal.

In locations like Idlewild and San Francisco, where barge delivery is cheaper than truck, bulk storage could be at water's edge, with four pairs of 5000-gallon satellite tanks located near the ramp. Installation costs here ran higher than for a comparable commingling system: 112%, 115%, and 118%.

In the basic segregated design the tanks would be from 350 to 450 feet



This is API's segregated fuel system for airports. In this plan each of four storage areas has three 25,000 underground tanks, three 750-gpm, 20-hp turbine pumps, three water separators in pits, three pits for unloading tenders, and three transport unloading connections. Valves on either side of each pair of fueling pits permit gates to be served from either direction.

of the terminal would be served similarly.

If a change in gate assignments results in the second carrier using gate 11, the switch can be made easily by closing a valve just to the right of the gate. Area A fuel can then be pumped to the two servicing pits at gate 11.

During the first fueling, area A fuel will unavoidably contain some area B fuel which had been trapped in the pipes, but API estimates that this would amount to only 60 or 70 gallons.

Alternate segregated proposals are suggested by API for cases in which local airport regulations make it necessary to fill the storage tanks remotely from two unloading areas. Even this

away from the terminal building. "At many large airports (Chicago, for example)," notes the API, "large-capacity storage tanks are presently located immediately adjacent to hangars and other buildings, with tender-loading facilities and vent lines carried within inches of the building walls. These tanks are filled by transport trucks standing within 15 to 30 feet of the structures."

"The segregated fueling systems," API concludes, "... provide complete product segregation, equal safety, and more assurance that the field will never be shut down for lack of fueling facilities. They can be provided for approximately the same money as a commingling system."

LOOK for the
Announcement
with the **STAR**
and **ARROW**
on page 61
IF YOU-



**CAN STAND
PROSPERITY**



Extra Section

By Wallace I. Longstreth

WHEN PHILIPPINE Air Lines pulled out of the long-range international airline business, International Air Transport Association tariff agent W. D. Barrington got permission from CAB to cancel PAL rates and fares by supplements to the tariffs rather than by deletion of the airline name wherever it appeared. Saving by this method was calculated at over \$6000—\$700 on the International Cargo Rules Tariff, \$1500 on the International Passenger Rules Tariff, \$1500 on the Western Hemisphere Fares Tariff, and \$2800 on the Trans-Pacific and Trans-Atlantic Fares Tariff. Pages involving PAL will be left alone until there is a change for some other carrier, which shouldn't be long.

General Services Administration, the outfit which serves as traffic manager for government agencies, calculates that new issues of tariffs (not just airline tariffs) run close to 140,000 a year. As of now, GSA has assembled a library of over 100,000 tariffs and 400,000 supplements, which it uses in settling the estimated \$2 billion annual federal transportation bill, and for handling, in 1953, 75,000 requests for information from various non-military government agencies. In addition to all other tariffs, airlines are now getting ready to issue tariff participation tariffs. New CAB regulations (effective July 1) require an index of tariffs (in the form of a tariff) of every carrier with 10 or more effective tariffs, or which is a participant in three or more tariffs published by others. CAB feels such an index is necessary to "assure there is no duplication or conflict in fares or rates, and in order readily to ascertain the applicable fares and rates which are in effect."

Getting the right information to the right people at the right time is a problem that international airlines and, to some extent, domestic ones are solving by long distance telephone. Rather than trying to put an expert in every city originating inquiries, airlines are using the telephone company's Enterprise and Zenith telephone numbers, which permits payment of toll charges on calls from travel agents and others, otherwise forbidden by IATA and ATA agreements.

With this arrangement, a travel agent, or anybody, can pick up the telephone in one city, call the Enterprise number listed for the airline, and be put through to the airline's district office in another city without having to pay the long distance toll or having to go through the usual long distance operator-client patter when charges are reversed. As an example, the client in Akron asks the local telephone operator for Enterprise 1-1000 (SAS in Akron), and is connected with Cleveland's MAin 1-8413 (Cleveland district office of SAS), but as far as the caller is concerned, he is talking to SAS in Akron. Charges for such calls are included with the airline's regular statements.

In addition to obtaining greater utilization of trained personnel, the Enterprise system aims at the sales appeal of putting an airline expert right in the home town of the client. Enterprise numbers are not new, but over the last several years their use by airlines has grown rapidly. To foil pranksters, and to avoid calling attention to a competitive advantage, many of the numbers are "unlisted," making it impossible to determine how many of the Enterprise numbers actually are in use.

Competitive advantages are hard to maintain in the airline business, and the unlisted Enterprise number is about to leave the scene. In June, the ATA adopted a resolution stating that no member airline may have an unlisted Enterprise or Zenith number in any given area unless it also has a listed one.

If having routes competitive with Capital Airlines is indicative of interest in the Viscount, Vickers-Armstrong should be wearing a smile. All but three of U.S. trunk airlines operate between pairs of points served by Capital.

HONOR ROLL

A Quarter Century in Aviation

- G. T. Weaver, TWA. Captain, Los Angeles. 25 years.
- J. T. Tomlinson, TWA. Ass't dir. of Atlantic region operations, New York. 25 years.
- F. A. Vieth, TWA. Line maintenance general foreman, San Francisco. 25 years.
- Evan Lewis, TWA. Captain, Los Angeles. 25 years.
- C. E. Corron, TWA. Flight dispatcher, Los Angeles. 25 years.
- H. E. Campbell, TWA. Captain, Los Angeles. 25 years.
- J. S. Bartles, TWA. Director of Western region operations, Los Angeles. 25 years.
- John Larsen, TWA. Superintendent-navigators, New York. 25 years.
- M. B. Joyner, TWA. Supt.-station and in-flight service, Paris. 25 years.
- H. H. Gallup, TWA. Mgr., flight test inspection, Kansas City. 25 years.
- C. S. Cain, TWA. Supt., flight planning, Kansas City. 25 years.
- B. I. Kelly, TWA. Accessory overhaul general foreman, Kansas City. 25 years.
- C. T. Sinnard, TWA. Station manager, Peoria. 25 years.
- F. G. Richardson, TWA. Flying supervisor, Kansas City. 25 years.
- W. E. Davis, TWA. Chief radio operator, Indianapolis. 25 years.
- E. A. Maxfield, TWA. Master mechanic, Kansas City. 25 years.

SOUTHERN CALIFORNIA

Aviation HEADQUARTERS



★ AVIATION ROOM
Home of the "Q.B's"

★ AIRLINES CENTER
American, Pan-American, TWA, and Western ticket offices.

★ AIRPORTTRANSIT
Exclusive Hollywood Stop

★ AIRCRAFT MFG. CENTER

The "Islander"

*Cinegrill ★ Garden Grill
Heated Swimming Pool*



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THOS. E. HULL, PRESIDENT L. B. NELSON, GENERAL MANAGER



AIRLINE COMMENTARY

• TRAFFIC • SALES • PUBLIC RELATIONS • by Eric Bramley

The "no-record" passenger is one of the toughest airline problems—one that results in a large number of irate customers and that leads to hard feelings among airlines. This is the gentleman who arrives via one airline and thinks he holds continuing space on another. But he's greeted with a blank stare—there's no record of his space. Exactly how these slip-ups occur has been something of a mystery and the subject of much argument. So now we're going to have an investigation at the most troublesome spot, Chicago. Starting sometime this month, every "no-record" incident at that city is going to be tracked down, to find out, if possible, who muffed the ball. A long overdue investigation, we'd say.

Extremely effective cartoons being used by TWA in the Skyliner, company publication, to make employees cost-conscious. Recent one is captioned: "TWA has to fly one passenger 10 miles to pay for one roll of scotch tape. Don't be unconscious. Be cost-conscious."

As reported before, domestic airlines have been meeting to see if they can find ways to put more revenue into their tills. CAB so far has said they can't discuss raising fares, so other means are being considered. Here's what's been discussed at recent sessions (there's no agreement at this writing): cut the family plan discount to 33 1/3% and change the days to Tuesday, Wednesday and Thursday (Monday is a good business travel day); charge full fare for unaccompanied children under 12; charge the combination of local fares, rather than a through fare, for trips involving stopovers. Plan for a no-show penalty system on first-class flights was presented, but some lines thought the procedures were too complicated.

Interesting to note that the international air travel trend is toward later and later bookings. Pan American tells us that 90% of first and tourist class bookings are now made within 60 days of departure, and 65% are made within 30 days. TWA reports a similar trend. PAA attributes it to "increasing sophistication in the ways of international air travel."

Sales and Traffic

Delta-C&S Air Lines and WAGA, Atlanta, have signed what it said to be one of the largest radio contracts ever concluded between an airline and a local station. The airline will sponsor CBS World News Roundup (15-minute program) six days a week for 52 weeks . . .

Jefferson City, Mo., produced considerably more passenger revenue in the first month of Ozark Air Lines' service than the carrier said it needed to cover out-of-pocket expenses of serving the city. Prior to starting flights on June 15, Ozark told city officials it needed 350 passengers monthly, yielding \$2,700 revenue. In the first 30 days, totals were 587 passengers and \$4,221 revenue . . .

United Air Lines plans to expand coach to 37% of its mileage. Nine more DC-6's will be converted to high-density as DC-7's are delivered. Coach percentage a few months ago was 25% UAL, 18% American, 48% TWA. W. A. Patterson, UAL president, says the only complaints he's had are from people who want first-class service but who are forced to ride coach . . .

Southwest Airways' fare increase, \$1 on one-way and \$1.90 on round-trip, now in effect . . . Mohawk Airlines, in further move to strengthen its New York to Liberty-Monticello, N. Y., helicopter service, has proposed a \$19.95 round-trip two-day excursion . . .

Resort Airlines' summer cruise business is more than 60% ahead of last year,

and company says it will continue operating cruises through the fall (until Dec. 12) at no increase in prices. Average cruise prices this summer are 15% below those of 1953 . . .

British Overseas Airways Corporation on Sept. 4 will start weekly London-Frankfurt-Cairo luxury Stratocruiser service, first time Boeings have been used on routes east of London . . . Northwest Airlines has added a second round-trip weekly DC-6B tourist flight Seattle-Manila . . . A "Sky Pac", a box of toilet articles, is now being given to each NWA Pacific passenger . . .

Pan American's Atlantic and Latin American Divisions plan to use their DC-6A cargo planes for both cargo and passenger movements. Seat plans have been drawn up . . . PAA has released the 21st and 22nd in its series of travel movies. They're "So Small My Island" (Japan) and "A Holiday in Nassau" . . . PAA staff has prepared and Simon & Schuster has published new edition of "New Horizons," containing useful travel information. Available at \$1 per copy from PAA, Box 1111, New York 17, N. Y. . . .

TWA has installed Bell equipment at Williamsport to answer and record phone calls received while the station is closed (United is using similar equipment at three stations). TWA says it has paid off—the device costs \$12.50 monthly; in one month 223 calls were received resulting in 24 reservations, 11 reconfirmations . . .

Chicago and New York must be made on anything less than a week's notice."

Airline Ticketing Praised

Airlines that are constantly trying to improve ticketing and passenger handling will enjoy the editorial in *Traffic World* magazine which states that the "antiquated, inconvenient" way in which railroads ticket passengers is driving business to the air carriers.

The writer says he had made a "considerable contribution" to airlines' increased business, and has used the airplane even when there was little or no business time to be saved. The reason is ease of ticketing.

After describing "foot-long" rail tickets, starting a fortnight in advance to arrange a rail trip, waiting three weeks for a refund and standing in line over half an hour in a terminal, the editorial adds that with airlines "a telephone call (almost never more than two calls), a signed slip and the use of the air travel card make picking up the ticket a matter for a secretary or an errand boy. No cash is involved, no question about acceptance of a personal check is raised. It is this sort of service that tempts the traveler to reach for his air travel card when a trip between

When to Advertise?

Pan American World Airways has expressed its opinion on a subject often debated in the industry: what's the best time of the week to advertise? Weekends, says PAA, are when most Americans decide about travel, particularly international, because that's when they have time to study literature and talk it over with the family.

Therefore, the major part of PAA newspaper advertising appears in travel supplements and magazine sections of Sunday editions. And, the company adds, readership surveys show that national magazines in which it advertises are read mostly on weekends. "Meet the Press," sponsored on alternate weeks by PAA, is on TV on Sunday.

Eleven of PAA's 16 U.S. sales offices have their busiest telephone inquiry day on Monday; four others name Tuesday. Washington's big day is Friday, presumably because its business is not predominantly private or tourist, PAA states.

AMERICAN AVIATION



*How much does
it cost to
mill a wing spar?*

Too much, in some cases. But not at Twin Coach Aircraft Division.

That's because we're fully equipped with aircraft tools and tooling...operated by aircraft workers...under experienced aircraft management. Our five plants, covering over 23½ acres, are devoted *exclusively* to aircraft production. We do no other work. We build no other products.

This is important because it means your airframe assemblies are produced by specialists...men who know no other standards than those of the aircraft industry.

So if you're looking for a subcontractor, call in Twin Coach Aircraft Division for consultation. You'll be secure in the knowledge that your airframe assembly will be made by men who think like you...men whose one thought is to produce to specification and on schedule.

A-9142



This special automatic spar mill has cut machining costs from 40 to 85 percent, depending on spar design complexity. It is just one of many similar pieces of high-precision, high-speed equipment.

**OTHER DIVISIONS
OF TWIN COACH
COMPANY MAKE:**

*Fageol Van Trucks,
Fageol Gasoline and
Propane Engines,
Fageol-Leyland
Diesel Engines.*



TWIN COACH COMPANY

Aircraft Division

BUFFALO, N. Y.

TWIN COACH AIRCRAFT DIVISION MAKES ASSEMBLIES FOR BOEING B-52, GRUMMAN S2F AND UF, NORTH AMERICAN F-86, PIASECKI HUP, REPUBLIC F-84F, AND CLASSIFIED EXPERIMENTAL AIRCRAFT TYPES.

Wrenn Approves Proposed PAL Sale

Approval of the proposed acquisition of Pioneer Air Line's assets by Continental Air Lines has been recommended by CAB Examiner Thomas L. Wrenn, who dismissed opponents' charges that the merger was a "bail-out" for banks to which Pioneer is indebted.

Wrenn said the evidence shows that Pioneer and Continental acted "without pressure" from the banks; that estimated annual subsidy savings of \$897,000 are attainable; and that the estimated purchase price of \$987,000 is "within the zone of reasonableness."

He found that a merger of Continental and Braniff Airways, injected in the case in an exploratory manner by CAB itself, "has some merit" but need not be acted upon since it was conditioned upon a finding that the Pioneer-Continental deal would not be consistent with the public interest.

The Continental-Pioneer agreement was reached December 10, 1953, and involves sale by Pioneer of its certificate plus physical assets. Pioneer's local service certificate expires September 30,

1954, but renewal was not an issue in the merger case.

On "bail out" arguments raised by Braniff, Trans-Texas, and Central, Wrenn said "the uncontroverted evidence shows that the merger arrangement was not initiated by the banks and that it was not urged or demanded by the banks after they became aware of the negotiations."

Further, Wrenn said, the attitude of the presidents of the two airlines "as each testified was that of men who on their own initiative adopted a course of action which each believed to be to the best interest of his respective company, and not that of puppets maneuvered by banks without freedom of choice in the matter."

On another issue, Wrenn concluded the acquisition "would not constitute a breach of the underlying purposes of a policy of separation of local services and trunklines because of the substantial similarities in the routes and operations of Continental and Pioneer and in the geographic and economic characteristics of the areas which they serve."

WAL Presses Bid in Denver Case

Western Air Lines last month claimed Denver needs a "regional" carrier to provide needed service to and from California's bay area and pressed its bid to be the carrier named. As hearings in the Denver Service Case were heard before Examiner Ferdinand D. Moran, in Washington, WAL's v.p.-sales, Arthur F. Kelly, said the Denver-Salt Lake City-San Francisco/Oakland route should not be a "side-track" route for transcontinental lines.

Case centers around TWA's bid to include Denver on its transcontinental Route 2. United, now serving Denver, opposes new airlines coming into that city and is pressing for a segment between Denver and Kansas City. American, like TWA, wants Denver added to its transcontinental route and Continental seeks extension from Denver to the west coast and to Chicago. North American Airlines is the sole non-

scheduled airline applicant seeking a certificate for low-cost services through Denver.

Earlier in the case, WAL's president Terrell C. Drinkwater said Western's proposed operation contemplates no subsidy and would strengthen the carrier in line with Government policy, aside from the "obvious public benefits."

Kelly, under direct examination by WAL's counsel D. P. Renda said "we are not advocating competition for competition's sake. But when as in this case, there is a need for additional service and the present service has proved to be inadequate, the stimulus of competition which we seek to provide will produce the business."

United's bid for Kansas City was stressed by Ray W. Ireland, v.p.-traffic administration, who said United was prepared to initiate service with four round-trip transcontinental flights daily—two first-class and two coach flights.

CAB MISCELLANY

Pan American World Airways asked CAB to reconsider and expand scope of New York-Washington-Mexico City Case to embrace other U. S.-Mexico proposals.

National Airlines has volunteered to enter an interchange agreement with Eastern Air Lines between Houston and Miami via New Orleans and Tampa.

Continental Air Lines applied for "emergency exemption" to continue serving Houston if threatened pilots'

strike against American suspends present CAL-AA interchange between Houston and west coast.

Northwest Airlines applied for continued authority to serve Pusan, Korea, beyond present expiration date of September 16, 1954.

United Air Lines asked permanent or temporary renewal of authority which permits all-cargo flights from New England to midwest to be routed via New York.

CAB NEWS

AS OF NOW . . .

Next step in the proposed Braniff-TWA interchange between Houston and the west coast will be an oral argument probably late this month. Carriers have tentative approval, given recently in Southern Service to West Case, but need to offset exceptions taken by American, Continental, and Pioneer.

Two local service renewal cases are now up for final CAB decision and should be decided soon. They are the Ozark Renewal and Bonanza Renewal proceedings.

Pioneer-Continental Merger Proceeding will move to the oral argument stage about September 1, with decision likely in the Fall.

Trans-Pacific Renewal Case and U.S.-Hawaii Case are before the agency now for decision but White House action is necessary before action becomes public.

CAB CALENDAR

Aug. 10—Hearing in Trans-Texas Airways Renewal Case (civic intervenors). Houston, Tex. Docket 6485 et al.

Aug. 15—Hearing resumed in United Air Lines Mail Rate Case—Hawaiian Operations. Washington, D. C. Docket 2913.

Aug. 17—Hearing in Additional Service to Virginia Peninsula Case. Tentative. Docket 4841 et al.

Aug. 23—Hearing in Air Freight Renewal Case (East-West Carriers). Washington, D. C. Docket 4770 et al.

Aug. 24—Hearing resumed in Trans-Texas Airways Renewal Case (airline parties). Wash. D. C. Docket 6485 et al.

Sept. 8—Hearing in Additional Southwest-Northeast Service Case. Washington, D. C. Docket 2355 et al.

Sept. 8—Hearing resumed in Southwest Airways Renewal Case (airline parties). Wash. D. C. Docket 6503 et al.

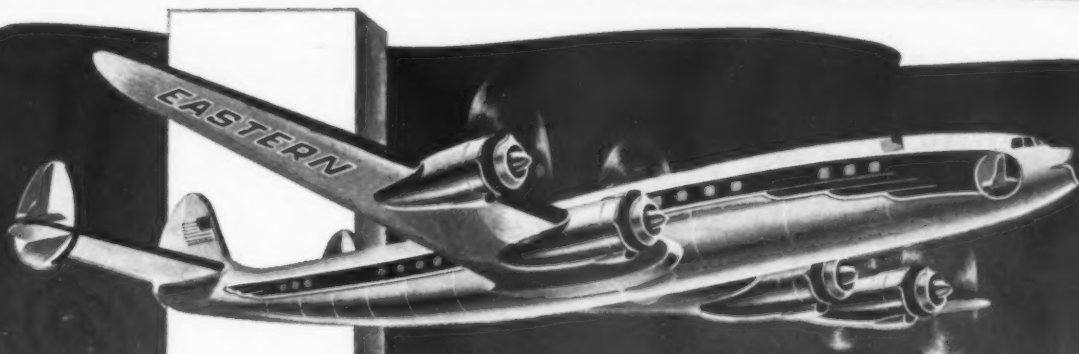
RECENT CAB DECISIONS

North American Airlines turned down on request to have former CAB staff officials testify at enforcement hearings on internal Board matters.

Flying Tiger Line and Slick Airways denied request for CAB "interpretation and clarification" of labor provisions of order approving merger.

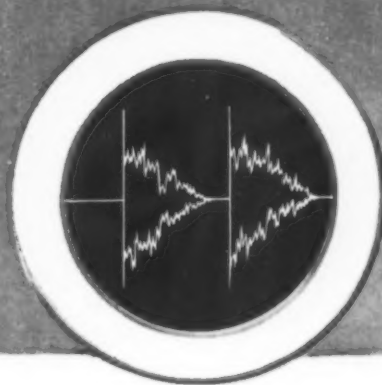
LOOK for the
Announcement
with the STAR
and ARROW
on page 61
IF YOU-

ARE A FRUSTRATED
ENGINEER



**BEFORE
INSTALLING
Sperry Engine
Analyzers...**
Average monthly
delay 654
minutes

**AFTER
INSTALLING
Sperry Engine
Analyzers...**
Average monthly
delay 347
minutes



Eastern Air Lines Reduces Ignition Delayed Time **47%**

**Records show Sperry Engine
Analyzers also reduce number
of replacement units**

Last fall Eastern Air Lines compared three months of operation using Sperry Engine Analyzers with the same three months of the previous year before the Analyzers were installed:

Here are the results per month:

■ Average number of ignition delays each month dropped from 9 to 6—a reduction of 33%.

■ Average delayed time dropped from 654 minutes to 347 minutes per month—a saving of 5 hours, 7 minutes, or 47%.

■ Average number of defective units removed per month dropped from 97 to 77—a reduction of 20%.

Other savings, too

These savings relate only to ignition—distributors, distributor fingers, ignition coils, ignition leads, magnetos and spark plugs. When you consider the additional savings in fuel from more

efficient engine operation, it's easy to see why Eastern's entire four-engine fleet is now being equipped with Sperry Engine Analyzers—and why they've been specified for Eastern's twelve new Douglas DC-7s.

Sperry Engine Analyzers—airborne and portable—are manufactured and licensed under John E. Lindberg, Jr. Pat. No. 2518427. Other U. S. and Foreign Patents Pending.

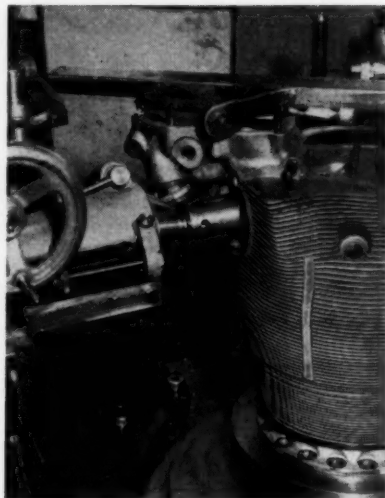
SPERRY

GYROSCOPE COMPANY
DIVISION OF THE SPERRY CORPORATION

**GREAT NECK, NEW YORK • CLEVELAND • NEW ORLEANS • BROOKLYN • LOS ANGELES • SAN FRANCISCO • SEATTLE
IN CANADA • SPERRY GYROSCOPE COMPANY OF CANADA LIMITED, MONTREAL, QUEBEC**

Maintenance Bulletin Board

New PAA Device Installs Exhaust Port Nipples



A new combination cylinder exhaust port boring machine and press for installing new exhaust port nipples has been devised by Pan American World Airways Pacific Alaska Division in its San Francisco engine overhaul shop. The device is already in operation for Pratt & Whitney R-4360 engine overhauls and is being adapted to R-2000 and R-2800 engines.

Big advantage of the new machine, according to Lawrence L. Londerman who supervises PAA's development shop, is that it gives greater accuracy in the alignment of exhaust system components than heretofore possible. It also permits the job to be done by a semi-skilled workman, whereas the very close tolerances involved in the operation have called for the services of a skilled mechanic in the past.

The basic machine consists of a circular steel table on which is mounted

a Rusnok mill head in a horizontal, rather than the usual vertical, position for the boring process. A built-in mechanically operated press or ram takes care of the exhaust nipple installation.

The cylinder is properly located on the machine by a mast located in the center of the turntable, and an air-powered mandrel at the top of the mast locks the cylinder rigidly in position. Further accuracy of cylinder alignment for both the boring operation and nipple installation is obtained by a series of index position locks which line up the cylinder barrel and head.

AA Shifts to Teflon Back-Up Rings

American Airlines has issued engineering change orders calling for the adoption of Shamban S-6144 and S-7234 Teflon hydraulic system back-up rings to replace leather rings throughout its aircraft fleets. Change is being made to combat hydraulic seal failures result-

ing from leather hardening, and to reduce system corrosion brought on by acids used in leather tanning.

AA plan is to use Teflon in all hydraulic system locations except the brakes and landing gear shock struts. Engineering changes on these systems calling for use of Teflon will be written at a later date.

Smooth Leading Edges With Tape for \$15



Simple solution to the problem of maintaining the appearance of wing leading edges of light executive-type aircraft adopted by Reading Aviation Service, Inc., Reading, Pa., costs only \$15.00.

Reading's answer, now in use on its Aero Commander, is to cover leading edges with some 36 yards of 4-inch-wide vinyl plastic pressure-sensitive tape marketed by Minnesota Mining & Mfg. Co. It protects against paint erosion, rain, snow, hail, or bugs, and won't curl or bubble once it is properly installed.

All-Weather Spark Plug

Availability of the R-115 all-weather spark plug for use in multi-engine executive aircraft, has been announced by Champion Spark Plug Co. The plug was formerly supplied only to the military services and major airlines.

The R-115 uses a $\frac{3}{4}$ "-20 shielding barrel instead of the conventional $\frac{5}{8}$ "-24 and is now CAA-approved in Pratt & Whitney R-1830, R-2000, and R-2800 engines and Wright R-1820, R-2600, and R-3350 engines.

New plug provides for uninterrupted insulation from ignition lead to spark plug, thereby eliminating flash-over resulting from moisture or altitude. Changeover to the R-115 usually requires only the replacement of plug elbows and lead connectors.



New maintenance work stand being used by Boeing Airplane Co. in B-52 production is hydraulic-electric in operation and extends to height of 43 feet, five feet short of the fin tip of the bomber. Stand is U. S. Air Force equipment manufactured by Hammond Mfg. Corp., Pasadena, Calif.

LOOK for the
Announcement
with the **STAR**
and **ARROW**
on page 61
IF YOU-



**WANT TO SECURE AN
ADVANCEMENT**

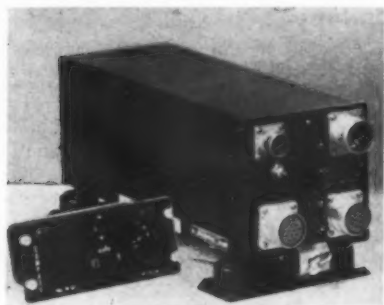
New Products

G-E Announces MA-1 Lightweight Compass

New lightweight aircraft compass system for military fighter aircraft and helicopters and said to have a free gyro drift rate of less than four degrees per hour has been announced by General Electric Co. Meter and Instrument Department.

According to G-E engineers, performance of the MA-1 system, as it is called, far surpasses the old 12- to 18-degree standard recognized in past gyro specifications.

It is designed to operate by pilot selection from either of two directional systems—a compass-controlled directional



New G-E MA-1 lightweight compass system has wing tip- or tail-mounted remote compass (not shown) to provide accurate heading information in any direction. Cockpit controller unit is at left.

gyro, or a free directional gyro with adjustable latitude control. In compass-controlled operation, system is slaved to earth's magnetic field through a tail- or wing tip-mounted remote compass to provide accurate and stabilized heading information in any compass direction.

In free-gyro operation, compass is manually disconnected and the pilot merely sets the cockpit controller to latitude he is flying.

Other features:

- Manual setting—by simple control knob, pilot can set gyro system to any desired heading.
- Synchronizing indicator—Indicator warns pilot of a malfunction which would cause deviation from correct heading.
- Power failure indication—Warning flag moves into prominent view if a-c or d-c power fails.
- Autopilot cut-off—Switch located in controller automatically disconnects autopilot if aircraft heading is changed by using the manual set knob.

MA-1 system has built-in synchro output for operating a radio magnetic indicator, omni-range, and automatic pilot. Address: General Electric Co., Meter and Instrument Dept., Dept. AAP, Schenectady 5, N. Y.

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"CECO" supplies 6 vital fuel system accessories for the J47-27 engine that powers the F-86 Sabre Jet.

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Sky Compass. New navigation device which gives a true aircraft heading by determining position of the sun when it is below the horizon has been developed by Kollsman Instrument Corp. for the Air Force.

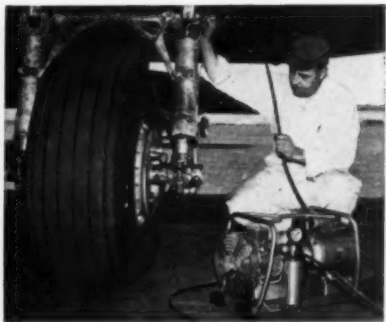
Called the sky compass, new instrument measures varying intensities of polarized light in the sky and indicates a "match point" when the compass is pointed in direction of sun's azimuth. Optical field of the unit contains a true-



heading scale which can be quickly and accurately read when sun's direction is learned.

Main advantage, according to Kollsman, is under prolonged twilight conditions in latitudes above 70° where standard navigation aids (which rely on sighting the sun, planets, or stars) cannot be used. Sky compass uses same aircraft mount and power supply as the Kollsman periscopic sextant, and navigator rotates the instrument as he looks through eyepiece until an analyzer pattern in the optical field disappears, indicating sun's azimuth has been located.

Address: Kollsman Instrument Corp., Dept. AAP, 80-08 45th Ave., Elmhurst, N. Y.

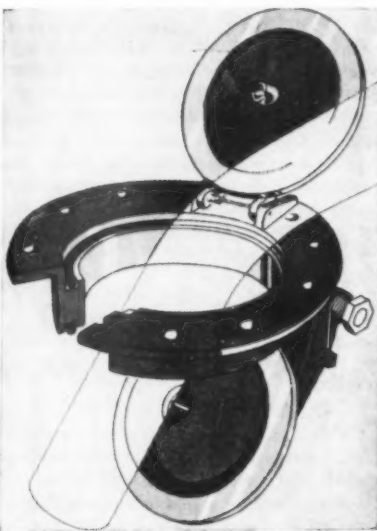


Portable Compressor. New high-pressure air compressor for servicing aircraft struts, accumulators, tires, or emergency air bottles is available with either an electric motor or gasoline power source. A low-capacity Series 32 com-

pressor provides 0.6 cubic feet-per-minute of free air at a rated discharge pressure of 2500 psi. A Series 130 unit delivers two cfm at 3000 psi. Address: The Cornelius Co., Dept. AAP, 550 39th Ave., N. E., Minneapolis 21, Minn.

Temperature Detector. New electrical resistance-type detector for measuring cylinder head temperatures of Wright R-3350 and Pratt & Whitney R-2800 and R-4360 engines has usable range from -50° to +300°C. A 45° elbow and the screwdriver slots in the head of detector's locking cap are especially designed to combat cylinder cooling-baffle interference during installation and removal. Flexible armored cable protects leads from abrasion during normal service. Address: Thomas A. Edison, Inc., Instrument Div., Dept. AAP, 71 Lakeside Ave., West Orange, N. J.

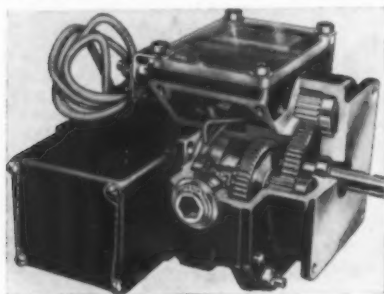
Canopy Seal. Frigi-flex, new compressor seal material for aircraft canopy and hatch closures, has ability to retain its resilience, flexibility, and positive sealing through a temperature range from -125° to 500°F. Manufacturer says present production techniques permit low cost fabrication into a wide range of shapes and sizes in either experimental or production quantities. Address: Arrowhead Rubber Co., Dept. AAP, 2300 Curry St., Long Beach, Calif.



Fuel Cap. New accident-proof fuel filler cap that weighs 1½ pounds features an internal trap door seal that remains closed except when fuel nozzle is inserted into the tank.

Model FV-400 cap has been tested to 250 psi without leakage or failure, and has been accepted by USAF under Spec. MIL-C-7244 for installation in a Lockheed production aircraft. Address: Santa Anita Engineering Co., Dept. AAP, 2451 E. Colorado St., Pasadena 8, Calif.

Rotary Actuator. Compact actuator for such aircraft applications as operating camera doors and wing-tip tank releases has stopping tolerance of $\pm 10^\circ$. Unit operates with a 110-volt, single-phase,



400-cycle reversible motor with brake at a 96:1 ratio. Input speed is 10,600 rpm, and, at 12,000-cycle, 110-rpm output, actuator develops 500 in. oz. torque. Address: Western Gear Works, Dept. AAP, Box 182, Lynwood, Calif.

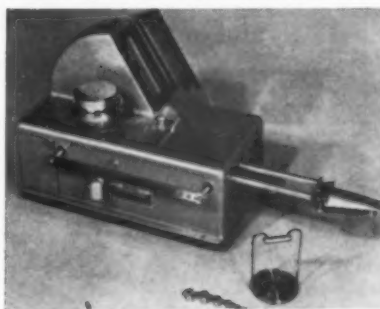
Magnetic Amplifier. Light-weight magnetic amplifier for aircraft navigation, gun firing and automatic control systems weighs only 15.5 oz. Unit consists of two stages of vacuum tube pre-amplification and a magnetic power output stage, and operates from a 115-volt, 400 cycle source requiring 14 va at a power factor of 0.7. Input impedance is 5000 ohms and maximum time delay is 1/400th second.

Kollsman Instrument Corp., Dept. AAP, 80-08 45th Ave., Elmhurst, N. Y.

Tube Shields. New heat-dissipating shields for subminiature tubes in guided missile applications are reported to have no resonances when shaken at 10g forces over a range from 0 to 2000 cycles. Operation relies upon contact of pure silver with the tube bulb to conduct heat from tube to a heat sink. Result is said to be a temperature gradient of 5°C . per watt of plate dissipation between tube and sink.

Address: International Electronic Research Corp., Dept. AAP, 177 W. Magnolia Blvd., Burbank, Calif.

Jet Blade Scale. New scale unit for weighing and balancing jet engine turbine blades uses a shadow-edge indication claimed by its manufacturer to give 300%



greater accuracy than mechanical indicator types. Device was developed for General Electric Co. Aircraft Gas Turbine Division and is portable for use at jet engine overhaul depots. Address: Exact Weight Scale Co., Dept. AAP, Columbus, O.

Technical Literature

Fuel Gages: Features of new two-tube, lightweight fuel gage unit are described in data sheet. Address: Avien-Knickerbocker, Inc., Dept. AAP, 58-15 Northern Blvd., Woodside 77, N. Y.

Jet Noise: New technical folder describes Acou-Stack system for silencing aircraft engine test facilities. Address: Industrial Acoustics Co., Inc., Dept. AAP, 341 Jackson Ave., New York 54, N. Y.

Tubing Caps: Descriptive specifications and price lists on aircraft tubing protective closures in a new 14-page catalog. Address: Tubing Seal Cap, Inc., Dept. 10-AAP, 808 W. Santa Anita, San Gabriel, Calif.

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Dayton 2, Ohio • 8401 Cedar Springs Rd., Dallas 19, Texas

People

MANUFACTURING

Dr. Carl A. Frische, Sperry Gyroscope Co., appointed v.p.-operations covering both engineering and manufacturing divisions. Former v.p. for manufacturing, **E. U. DaParma**, now v.p. for special plans and coordination with other Sperry plants.

E. H. Stau has joined Olympic Screw and Rivet Corp. as v.p. and director of sales.

W. M. Shehan named administrative staff ass't to **Lynn D. Richardson**,

v.p. of military sales of Beech aircraft.

Peter J. Jensen appointed mgr. of manufacturing of General Electric's carbonyl department.

Eugene W. Bailey, formerly secretary-treasurer of Pioneer Air Lines, is now gen. mgr. of Dallas Aero Service.

J. W. Baird elected ass't secretary of Pacific Airmotive Corp., in addition to his duties as military affairs mgr. in Dayton, O.

W. J. Reed and **Ralph A. Irwin** named mgr. and ass't mgr., respectively, of aviation sales for Westinghouse Electric Corp.'s Washington district. Former mgr., **H. T. Harrod** is at headquarters in Pittsburgh as ass't sales mgr. for defense products.

E. E. Durbin has replaced **A. E. Stuart** as chief of inspection-modernization and **Sam E. Keith** replaces **Warren R.**

Neal as chief of traffic at Convair's Fort Worth plant.

R. L. Wehrli, formerly chief physicist and head of research of Reaction Motors, Inc., named director of research and development of Robertshaw-Fulton Controls Co.'s Anaheim division.

Kenneth Slawson elected v.p. of Ford Instrument Co., division of The Sperry Corp.

Robert R. Miller, ass't to the president of Northrop Aircraft, elected a director of Radioplane Co., a subsidiary.

C. R. Bumstead named mgr. of Lockheed Aircraft Corp.'s new engineering laboratories dept. of the Missile Systems experimental operations division.

Mark Miller has resigned as Convair's director of commercial sales.

Walter C. Loeman, appointed mgr. of Parker Aircraft Co.'s check valve and fitting division in Los Angeles from manager of Parker's tube and hose fitting division in Cleveland.

Charles J. McCarthy, former v.p. of United Aircraft Corp., elected board chairman of Chance Vought Aircraft, Inc., formerly a wholly owned subsidiary of UAC.



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McCarthy



Burke

AIRLINES

E. Paul Burke has been promoted to ass't to the general operations mgr. of Trans World Airlines from superintendent of flight planning.

McGregor Smith, chairman of Florida Power and Light Co., elected to Eastern Air Lines' board of directors.

Homer J. Merchant, mgr. of ground services for United Air Lines since 1952, named ass't gen. mgr. of sales.

Everett M. Goulard has been elected ass't v.p. of industrial relations of Pan American World Airways.

C. E. Banks and **C. F. Sharp**, elected v.p. of production and customer relations, respectively, for National Airlines.

Frederick A. Quanjer is now district sales manager in New York for SWISS-AIR rather than KLM Royal Dutch Airlines, as reported in the July 19 issue.

Sidney A. Stewart has resigned as a director of Delta-C&S Air Lines.

Roger G. Flynn has replaced **R. G. Dinning** on the Air Transport Association's operations staff. **Craig F. Timmerman** will direct the air navigation-traffic control division of ATA's Washington operations dept., and **S. P. Saint**, former ANTC director, has been assigned as full-time airline representative on the Air Navigation Development Board.

Ben H. Longfellow appointed director of employee services for Northwest Airlines succeeding **Don Cherp**, resigned.

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photo reconnaissance fighter for the U.S. Air Force

MARTIN B-57 "Night Intruder"
bomber for the U.S. Air Force

NORTH AMERICAN FJ-3 "Fury"
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THERE IS EVERY indication that commercial availability of the twin-engine Sikorsky S-56 will make the helicopter a normal means of transport in Europe. SABENA Belgian Airlines has indicated that it will buy this model and British European Airways is reported to be extremely interested in having Westland Aircraft build the airframe under license and install Napier Eland turboprops as powerplant. This would be in line with BEA's plan to re-engine its Ambassadors (currently using Centaurus piston engines) with Elands.

BEA is very anxious to obtain larger helicopters than those presently available on the commercial market. Chief executive Peter Mansfield explained recently that the cost per aircraft-mile of operating a single-engine four-passenger helicopter such as the Bristol 171 "is at present about the same as that of a 32-seat DC-3 because the rotorcraft has relatively low hours-between-overhaul, a high prime cost (more than twice a DC-3's), and is relatively slow."

Meanwhile BEA is going ahead with its program to operate S-55's between London Airport and central London. The single-engine rotorcraft will be equipped with an amphibious float landing gear which will enable the airline "to maintain essential safety standards on a regular scheduled operation in all weathers." This will be achieved by following the River Thames instead of flying over built-up areas (adding about five miles to the direct distance of 19 miles). BEA will carry five passengers in its S-55's, charge a fare of \$4.40 for the 18-minute trip and will operate about eight round trips daily.

The helicopter activities of BEA and SABENA (which has now carried over 20,000 helicopter passengers and is getting a current daily utilization of seven hours out of each of its S-55's) are causing increasing interest among airlines all over the world. Most operators, however, support the recently stated views of Trans-Canada Air Lines which plans to use helicopters for short-haul routes but wants twin-engine models, "better aerodynamically, more free from troubles and more economical than anything we can get today."

Japan Wants 3750-Plane Air Arm

Japan hopes to have an air arm with 3750 planes and 130,000 personnel by the end of fiscal 1955, according to a program based on the hope of substantial U.S. assistance both in supplying aircraft and in assisting the Japanese aircraft industry. The total Japanese requirement is for 2116 combat aircraft, 684 trainers, and 950 helicopters before fiscal 1956.

Although officially Japan is keeping quiet on the manner in which these goals are to be reached, the Japanese aircraft industry should be capable of producing almost several hundred planes annually within a few years. Arrangements are completed or in hand for the manufacture under license of all types of American aircraft. Initially, of course, the "manufacture" would be little more than assembly of imported components, particularly for the more complex models.

In the first year of production, up to 53% of the aircraft would be assembled from components. By the second year it would be possible to build trainers and small transports with no imported components, but, for other types, up to 35% of the components would have to be imported. By the third year, Japanese production planners estimate, all types of aircraft could be built without imported components except jet fighters, for which 13% of the

components would have to be imported. An overall description of the Japanese industry's potential appeared in AMERICAN AVIATION of March 1.

Even if the optimistic figures of the Japanese prove to be correct, the industry will produce no more than 12 aircraft this year, 178 in 1955, and 414 in 1956. The 1955 program calls for production of the following quantities: fighters (F-86E/F-94C/F-84E)—6; reconnaissance aircraft (AF-2)—18; helicopters (H-12 and H-19)—48; transports (Super DC-3)—12; liaison aircraft (L-126A)—36; trainers (T-33/T-28/T-6G/T-29B)—58.

To implement the Japanese air arm program, the contribution of substantial quantities of aircraft by the U.S. is being counted on. The following table shows the numbers that the Japanese expect the U.S. to furnish through 1958:

	1955	1956	1957	1958
F-86E	50	200	200	247
F-94G	20	80	100	—
F-84E	20	80	100	—
B-57A	2	50	130	180
AF-2	20	60	90	—
P5M-1	6	4	—	—
H-12	45	40	—	—
DC-3 (Super)	35	40	—	—
L-126A	200	125	—	—
H-19	300	300	240	—
T-33	50	—	—	—
T-6G	148	100	—	—
T-28	100	108	—	—
T-29B	20	6	—	—
Total	1016	1193	860	427



RUSSIA'S S-55 copy was demonstrated at the Soviet Aviation Day show at Moscow Tushino airport (where the above photo was taken). "Designed" by Mikhail Mil, the helicopter is powered by a nine-cylinder radial driving a four-blade main rotor (turning in a clockwise direction). It is in large-scale production.

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INTERNATIONAL AVIATION

MILITARY

SWEDEN: The Swedish Air Force has ordered 140 Hawker Hunters for delivery within two years under a \$35 million contract with Hawker Aircraft Ltd. Designated J34, the Hunters will replace the J28B's (Vampire 50's) still used by two Swedish day fighter wings and will also bridge the gap between the Saab J29 "flying barrels," now equipping most of the other day fighter wings, and the 1000-mph interceptor now under development by Saab.

CHINA: The Nationalist Air Force is to be supplied with F-86 fighters by the U. S. The Formosa-based air arm currently operates a small number of F-80's and F-84's as first-line interceptors.

GERMANY: A demonstration of the following British military aircraft was given to German military planners near Cologne on July 7: Meteor NF 14; Aiglet; Venom; Vampire trainer; Chipmunk; Canberra; Marathon; Hunter; Pembroke; Provost; Skeeter; Prestwick Pioneer; Sea Mew; Swift; and S-55 (Westland-built version). The Germans were also shown data on the Folland Gnat and Avro 720 lightweight fighters.

MANUFACTURING

BRITAIN: The Saunders-Roe Princess flying boat has completed about 100 hours of test flying and is now likely to be cocooned pending the availability of the more powerful BE 25 engine, six of which could replace the present ten Proteus units. Two other partially completed Princesses are already cocooned. . . The Handley Page Victor four-jet (Sapphires) bomber prototype crashed on July 14 after the tailplane "wobbled" and tore away at an altitude of 100 ft.

(an eyewitness reports). The second prototype is almost ready to fly and production is about to start.

FRANCE: SNCA du Sud-Est made a profit equivalent to \$2 million in 1953. It has received an order for prototypes of the SE 212 Durandal supersonic fighter. The SE 210 Caravelle jet transport is due to fly early in 1955; production plans are in hand. Production of the SE 3120 Alouette II helicopter is also planned. A pre-production batch of three Baroudeur lightweight fighters has been ordered in addition to two prototypes already completed. . . SNCA du Nord has started tests with the Nord 1750 helicopter developed in association with Aerotecnica, Spanish company. Power is supplied by a Turbomeca Artouste. . . The first pre-production Fouga 170R Magister made its first flight on July 9. The Fouga company has received a production order for 100 of the Marbore-powered planes.

AIRLINES

CANADA: Canadian Pacific Airlines is considering buying C-46 equipment for the projected inauguration of all-cargo services over its northern routes at a 25% cut in present freight rates. CPA reportedly considers that the low initial cost and greater freight capacity of the C-46 makes it a better proposition than the Bristol 170 or a converted DC-3.

JAPAN: Japan Air Lines lost about \$800,000 in the second half of its 1953 fiscal year but expects to be in the black shortly by increased use of Japanese flying personnel (it is planned to complete the switch from U. S. to Japanese crews by next April) and by changes in its domestic route pattern. Transport Minister Ishi has stated that the government has no present plans for making JAL a fully nationalized company.



BRITAIN'S No. 1 production fighter, the Hawker Hunter, has a highly conventional structure; only moderately thick skin with closely spaced ring frames and continuous stringers. Center fuselage and center plane form an integral unit. Fuselage is in four sections: noscap, with dielectric gunsight dome and camera aperture; cockpit with radar sight mounting, nosewheel, and gun bay; center portion, with wing roots, intake ducts, and fuel cells; detachable tail (for engine change) with spigoted frame joint. Front/center-fuselage joint has four self-aligning longeron fittings and 31 bolts on frame flange. Spline fairing contains push-pull tube tail control runs. The Avon 21 engine appears to be mounted in trunnions in tail fuselage, with compressor projecting into center portion.



The Great Eagle Owl is the larger brother of the great horned owl of North America. It is a fierce and rapacious bird of prey which has been known to lift young fawns in its talons.

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Weight, the enemy of the aircraft designer, is beaten decisively in the Napier Eland propeller-turbine. The weight/power ratio at take-off is 0.52 lb/e.h.p. This low specific weight means a great deal to the operator in terms of payload, performance, and direct operating cost.

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- Smooth acceleration and handling — thanks to excellent compressor characteristics.

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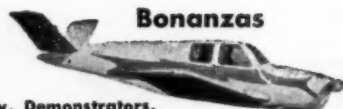
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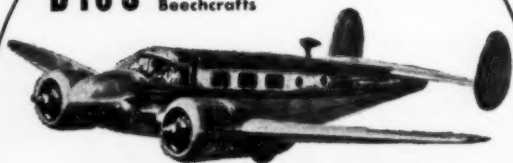
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Old Cathedrals. I'm a gone goon when it comes to cathedrals. I mean old ones hoary with age built between the 11th and 16th centuries. Anything after that is too modern.

Some of my uncultured friends (culture being a rather scarce item in aviation) can't understand why a no-good bum and skeptic like me can like cathedrals. They just don't know me. Down deep in that martini and lurking behind the Persian rugs of an Arab bordello and hidden behind that French plumbing, about which I'm gaining a reputation as a world expert, is a simple but pure soul. Don't snicker. I admit it's a small soul, but there it is. Just one little soul of course. But after all, Howard Hughes has just one flying boat, too, but let's not wander off into extremes.

Just give me a fine old cathedral, preferably Spanish, and I'm happy. I like to drive toward a cathedral town and spot those spires and towers in the distance. I like to pull open the big creaking door and step inside with a glow of anticipation and behold the graceful tall lines of the nave columns. Quite a breathtaking view, that first glimpse, especially when there are stained glass windows to provide a soft mystical atmosphere.

The Spanish Product. All of us have quirks and I'll be the last to deny that I have more than the average. For the like of me I can't fathom this liking for cathedrals. My old Baptist pastor who used to thump against Rome and Rum would turn over in his grave if he knew I've been in more different Catholic churches and cathedrals than 99% of the members of that church. All I can recall is that as a kid I used to pore over pictures of English cathedrals and dream of seeing every one. In 1930-31 on a scholarship I did pretty well, but it wasn't the English cathedrals, nor even the French, that cast a spell over me. It was the Spanish product.

Of course that was long ago, over twenty years. When I revisited Spain this April I wasn't really sure whether I'd still be so enthralled. Time often erases beauties and charm and likings, but never, of course, if the subject is genuine to start with. I had decided that Burgos, which had rated absolutely No. 1 in 1930-31, would be the test tube. If I still liked it, then I was simply a gone goon for cathedrals and anybody could make whatever they liked out of it. After all, some people collect postage stamps.

So as we rolled along (cussing out every chuck hole) from the Spanish-

French border through Vitoria and on to Burgos, I felt like I was going to a class reunion twenty years after graduation to look up an old flame. Would she be pudgy, shopworn, poorly dressed, much older? Or still that same little cuddly creature that used to neck so well in the back seat of a car on a dark road off the campus? Know what I mean? I was almost afraid to face it.

Winter in April. To make things worse, a cold gale was blowing. The guidebooks say April is a superb month for motoring in Spain. Early spring and all that. Believe me, it was like the dead of winter on those plains of Old Castille. It was miserable. The car heater worked overtime. It was a dismal pilgrimage to Burgos.

We checked into the Hospel El Cid, a government-built hotel for motorists on the eastern outskirts of town. The wind was whistling around the corners. The rooms were not exactly warm. But we cleaned up quickly because we still had a few hours of daylight. Back into the Bentley and off into the town of 85,000 population. I could spot the cathedral spires and remembered the



general layout of the city, but the town has doubled in size.

I drove up in the square at the front of the cathedral. It is rare indeed in Spain when there is any parking problem. We got out and took in the front view. Then we went inside.

1221-1500. What can I say beyond the fact that this magnificent structure is still tops in the world in my humble layman's opinion. It is glorious on the outside, even much more so inside. No matter where the eye roams, it rests on an architectural delight. To try to describe it would be meaningless—you have to see and absorb it yourself. The octagon tower over the central transept is one of the great artistic achievements of all time, yet it was designed and built centuries ago. The actual

beginning of the cathedral was 1221 but the whole building wasn't finished until the end of the 15th century.

The stained glass, the countless sculptures, the richly decorated chapels, the choir with its magnificent wood carvings, the handsome staircase in the north transept, the rich tapestries, the cloister, the paintings, and especially the capilla mayor with its incredible Renaissance retable—everything is a masterpiece. The architecture itself is Gothic in the finest tradition.

What was it that drove those people between 1221 and 1500 to build this magnificent structure? Considering the facilities available, it was a monumental undertaking. But even more than that, what was the spark of genius or inspiration which created such beauty—beauty in stone which has never been duplicated or successfully imitated since those days of the great Gothic era?

Driving Force. Some driving force, that same force that makes for progress on this earth, that progress which makes one race go ahead and invent and build and develop, while another race continues in the unskilled squalor of the ages with no abilities except to accept handouts, created Burgos cathedral over a period of almost three centuries with a harmony that could only derive from continuity of purpose and design.

So many Americans rush through Burgos cathedral and see nothing except a big church. A great many American tourists are so terribly lacking in artistic appreciation that I wonder why they bother to go into old churches and museums at all. But one can absorb a lot of inspiration in such a place. History, beauty, grace, magnificence on a grand scale. Burgos cathedral is no wee kirk in the heather—it is 338 feet long and the spires rise 275 feet.

I won't bore you further except to say that like all things of genuine value, Burgos cathedral had not lost its charm. It will long outlive me. It has outlived scores of generations of Spanish. I fervently hope I shall see it again. And please, if you go there, enter by yourself, take it easy, don't rush, and for heaven's sake if you have only ten or fifteen minutes, stay away. Walk quietly; history and the art of the ages are sleeping there.

St. Nicholas. One more little item. Just outside the front entrance of the cathedral and up a flight of stone steps, is the tiny Church of St. Nicholas. I fear many tourists in their dash through Spain miss this wonderful gem. I will wager money that there is scarcely another more impressive retable—the richly sculptured huge altar piece—in the world. It was built of stone by Francis of Cologne (Germany) in 1505. It is fantastic, all the more so since the church is very small. Why was this priceless beauty built in such a tiny edifice by a German artist more than 400 years ago? Who knows, but there it has been all these years and you may see it for a very small tip to the guard who waits with his keys at the door of the church for those few visitors who take the time.

There was real artistry in those days. The artists and most architects today are just a bunch of bums. Lightweight. Go to Spain and see the vast treasure house of real heavyweights!

20-Ton 'chute Delivery Developed for C-130's

An "aerial delivery system," making it possible to drop as much as 20 tons of cargo from an airplane, has been developed by Lockheed Aircraft Corp.'s Georgia Division for Air Force's C-130 turboprop assault aircraft. It can be adapted to other planes. AF has completed preliminary tests using a C-119.

System uses two aluminum alloy platforms with gross capacity of 25,000 lbs. and 15,000 lbs., respectively. Roller conveyors are used to place loaded platforms in C-130's cargo compartment. The pilot releases them by pushing a button in the cockpit; an "extraction" parachute disconnects one platform and drags it out the rear of the plane. An automatic mechanism then opens several larger chutes which lower the load to the ground. Second platform follows in a matter of seconds. Platforms and chutes are reusable. (See *From Storehouse to Georgia's Biggest Industry*, page 26.)

Military Joins Industry In L. A. Tax Fight

Military representatives have appeared before the Los Angeles County Board along with southern California aircraft manufacturers in challenging constitutionality of personal tax assessments levied on materials and equipment earmarked for the Department of Defense.

Col. Robert Hunter of the Air Force Judge Advocate General's Office, representing the Air Force and Army, and Comdr. Jerry Siefert, representing the Navy, contended the county has no right to make personal property assessments because title to the property passes to the government and does not belong to the manufacturers (in whose custody it is when assessments are written). Last year, the board denied manufacturers' protests and those assessments are now on appeal in the courts.

Assessments would result in about \$8 million in taxes.

ALPA-American Talks Are Broken Off

Mediation talk between American Airlines and Air Line Pilots Association had broken off at press time and the situation was called "very dubious."

Talks had been held with National Mediation Board in an effort to avert an AA pilot strike over the eight hour rule. Strike originally set for July 15 was postponed at NMB's insistence.

House Group Scores AF For Production Waste

Air Force was severely criticized by the House Military Operations Subcommittee for spending millions of dollars on large-scale production of an airborne long-range communications transceiver before it was completely developed or tested, and for reliance on the model to fill its needs while failing to act to provide substitute equipment for its planes.

The group asked Defense Secretary Wilson to re-evaluate the program to determine whether the equipment (RCA's AN/ARC-21) compares favorably with other available equipment. It also asked Wilson what action should be taken to curtail costs until ARC-21 is proven.

Examiner Would Renew Two Alaska Routes

CAB Examiner Francis W. Brown has recommended continuation of Northwest Airlines and Pacific Northern Airlines in the Seattle-Anchorage market but would drop Alaska Airlines from the Seattle-Fairbanks market in which only Pan American World Airways would be retained.

PNA's renewal would be for seven years; Northwest's would be conditioned on renewal of its Orient route at issue in another case. Brown also found that a merger of PNA and Alaska Airlines would be in the public interest, although the carriers have no agreement for such a deal.

Brown urged denial of NWA's application for renewal of its "inside route" from Twin Cities to Edmonton and Anchorage and of PAA's bid to serve Anchorage as well as Fairbanks. But if NWA is dropped from the Orient service, Brown said, PAA should take its place in Anchorage.

German Line to Begin Operations Soon

Indications are that the German flag airline, Deutsche Lufthansa, will start operations shortly. Transocean Air Lines has been awarded a contract to train the German pilots. Previous plan to have the Lufthansa's Convair 340's operated under British registration and flown by British European Airways pilots has been scrapped.

Meanwhile, a German non-scheduled carrier has been set up in Hamburg under the name of Deutsche Lufttransport Gesellschaft. Backed by Skyways, British independent, and two German forwarders (Kuhne und Nagel and Karl Prior), the airline will operate three DC-3's, which will be flown initially by British pilots.

Redmond Heads Bellanca As Mooney Quits

John Charles Redmond has been named president and executive committee chairman of Bellanca Aircraft Corp., succeeding James D. Mooney, who resigned as acting president and board member N. F. Vanderlipp had resigned as president on April 23.

Senators Ask Hearings On Local Line Issue

Senate Commerce Committee was holding hearings at press time on bills requiring CAB to grant permanent certificates to local service airlines. One bill (H.R. 8898) had already passed the House.

Decision to hold hearings, which were not originally planned, was made because some Senators asked to hear opposition witnesses. CAB and Commerce Dept. strongly opposed permanent certificates, claiming such action would obligate the government for large subsidy payments for an indefinite period. The committee has two measures pending, H.R. 8898 and the McCarran-Bricker bill (S. 3759).

Foreign Orders Sought For Plebe by Temco

The Temco Plebe, which recently lost a Navy trainer competition to the Beech T-34B Mentor, is currently being evaluated in Norway by the Norwegian Air Force and will be shown later in other European countries in hope of obtaining foreign orders, according to Robert McCulloch, Temco president. If sufficient orders result the company may go into production and again try to convince the Navy to evaluate the plane but, McCulloch added, Temco "will never again spend its own money to build an airplane for the military services." He added, however, that the firm would continue to submit design proposals to the Navy and Air Force.

Indian-Trans-Carib Lines Pick Viscounts

Indian Airlines has decided to order five Vickers Viscounts as partial replacement for its DC's. Decision came after a long period of vacillation between the British model and the Convair 340.

Trans-Caribbean Airways, U.S. irregular carrier, has placed a tentative order for two Viscounts for delivery in the fall of 1955, it has been learned. Order will be confirmed when certification of the aircraft by CAA is assured.



The Washington View

Wilson Wastes No Time

Defense Secretary Charles Wilson is wasting no time in starting preparation for the military budget request for the fiscal year 1956. Initial military strength recommendations will soon be forwarded to the National Security Council and President Eisenhower, a good three months ahead of last year's schedule.

The advance planning this year will be a distinct advantage to the Defense Department in calculating its future needs. Work on the fiscal 1955 budget didn't get underway until mid-fall.

"Solid Foundation"

After three and one-half months of public hearings, the Senate Commerce Committee last week concluded the major portion of its work on the McCarran omnibus aviation bill (S. 2647). It was still undetermined at press time, however, whether or not the committee would attempt to report a bill out this late in the final session of the 83rd Congress.

There was some indication that every effort would be made to follow through the lengthy proceedings to the extent of issuing a report. Sen. Pat McCarran, who made a closing statement as author of the proposed redraft of the 1938 Civil Aeronautics Act, declared it would be a mistake not to report a bill. He said a committee report to the Senate would have the benefit of becoming the focal point of interest and study for all concerned during the Congressional recess.

Consequently, Chairman John Bricker promised to proceed as rapidly as possible, although he was not overly optimistic a report could be made. "And nevertheless," he said, "our hearings record will still be a solid foundation for next year and should mean only brief hearings will then be required."

Checks on Offshore Procurement

Offshore procurement in fiscal 1955, which has been estimated at \$300 million, including \$82 million for aircraft, is to be covered by a new policy dictated by Congress. The intent is to place new and additional checks on the offshore program.

A provision written into the foreign-aid authorization bill states that military as-

sistance funds may be used for off-shore procurement unless the President determines that one or more of four conditions will result from such procurement. The President, therefore, is to act on his own discretion on a condition of (1) adversely affecting the economy of the United States, (2) inadequate protection against sabotage, (3) unjustifiable cost, and (4) delays in delivery.

The concern in Congress over the three-year-old offshore procurement program was brought about by two related occurrences: increasing criticism of the program, and the current industrial situation in some areas of the U.S. where industry is operating at less than capacity and there is substantial unemployment.

The latter is borne out by the Congressional directive "to give careful consideration to the possibility and desirability of placing orders in areas of labor surplus in the U.S. before placing them in foreign countries." Also, "to require prices and delivery dates be in line with those in the U.S."

Promoting Foreign Travel

A more active interest in the promotion and facilitation of international travel should soon be undertaken by the federal government. The responsibility will rest with the Foreign Operations Administration. FOA will act in response to a directive from Congress which has spelled out a policy for encouraging travel in the new foreign-aid bill. The policy, briefly, instructs the President to facilitate and encourage the travel of U.S. citizens to countries receiving assistance and vice versa. There is to be no cost to the government except for FOA administrative expenses.

Forces behind the legislative action were Rep. Jacob Javits and Sen. Ralph Flanders, each of whom sponsored joint resolutions designed to foster international travel. At the same time, the Congressional action has given legislative sanction to the findings and recommendations of the Randall Commission which included the subject of international travel in reporting to the President on U.S. foreign economic policy.

No Authors in Defense

Top Defense officials, including both civilian and military chiefs, have been banned from writing articles for publication by a department order.

Affecting all 24 civilian secretaries and assistant secretaries and the Joint Chiefs of Staff, the directive is believed to have resulted from the proposed by-line article of Assistant Secretary of Navy James H. Smith on VTO fighters for a national bi-weekly some months ago. However, because the information would have been given exclusively to a single publication under an official by-line, the article was killed.

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